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AGRICULTURAL ECONOMICS

BY

GEORGE O'BRIEN

LITT.D., PROFESSOR OF NATIONAL ECONOMICS OF IRELAND, UNIVERSITY COLLEGE,
DUBLIN

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PREFATORY NOTE

This little book is based on my lectures on Agricultural Economics in the Albert Agricultural College, Glasnevin, which now forms part of the Faculty of Agriculture in University College, Dublin.

I wish to express my gratitude to Mr. E. G. Peake and Professor J. P. Drew, who read the manuscript, and to the Rev. Professor Finlay and Mr. John O'Donovan, who read the proofs. To each of these friends I am deeply indebted.

G. O'B.

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AGRICULTURAL ECONOMICS

INTRODUCTION

INDUSTRIES may be divided into two classes: first, those industries where man comes into direct contact with nature on land or water; and second, those industries which are concerned with manufacturing, transporting or marketing the products of the first class of industry. These two classes may be described as primary and secondary respectively. The primary industries may themselves be divided into the extractive and the genetic. The extractive industries are those "which merely appropriate natural objects without any attempt to replace what is taken or to keep up and increase the supply," while the genetic are those "which make a conscious effort to replace that which is taken and to increase the supply."[1] Hunting, fishing, grazing, lumbering and mining are examples of extractive industries, while agriculture, forestry and fish culture are examples of genetic. Of all these industries agriculture is by far the most important.

The word "agriculture" has no very rigid definition. It is on some occasions used to include, and on others to exclude, such occupations as horticulture, market gardening and forestry. In the present essay we shall use the word to include every industry which aims at producing vegetables or animals by the cultivation of the soil.[2]

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[1] Carver, *Elements of Rural Economics*, pp. 23, 29.

[2] Jouzier, *Économie Rurale*, p. 11. The precise meaning that should be attached to the word "agriculture" is discussed on p. 31 of the report prepared by the International Labour Office in 1928, entitled *The Representation and Organization of Agricultural Workers*, and by Sir Henry Rew in his *Primer of Agricultural Economics*, pp. 13–14.

Agriculture is a science, a craft and a business. The science of agriculture, or rather the group of physical sciences which bear on the cultivation of the soil and the raising of animals, is a matter for study by physical scientists; the craft of agriculture, in so far as it is an attempt to translate scientific knowledge into practice, is the concern also of the student of the physical sciences, but, in so far as it is an attempt to win a profit for the cultivator, it is a matter for study by the economist; the business of agriculture is the concern of the economist alone. The craft and the business roughly correspond with the cultivation and the marketing of the farm produce respectively. Between these two branches of the farmer's operations no hard and fast line can be drawn. Both are equally productive; to confine the use of the term " production " merely to the cultivating side of farming is to mistake the function and to underestimate the importance of marketing. The two branches of the farmer's activity may be very different and may be subject to many different economic laws, but they are nevertheless both essential parts of the productive process. Cultivation produces utilities of form, whereas marketing produces utilities of time, space and possession.[1]

Agricultural economics may be defined as the application of general economics to the craft and business of agriculture. This study should be distinguished from several closely allied studies with which it is occasionally confused. In the first place it must be distinguished from rural sociology, which is concerned with the development of the social life of the countryside. Many countries pursue public policies designed to mould the life of the rural population on a plan that may not be consistent with the greatest possible prosperity for the farmer. With such matters the agricultural economist is only indirectly concerned; they are not part of the raw material of his own science ; they are the concern rather of the statesman and the sociologist.[1] Again, agricultural economics is not synonymous with land economics, since land is used for many purposes other than agriculture.[2] Nor is it simply a branch of agricultural science, as it is concerned with the study, not of farm produce as such, but of the value of such produce in relation to its cost.

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[1] On the essentially productive nature of marketing see Macklin, *Efficient Marketing in Agriculture*, pp. 22–7; Weld, *The Marketing of Farm Products* p. 5; Taylor, *Outlines of Agricultural Economics*, p. 409.

Another kindred subject with which discussions on agricultural economics are frequently complicated is the relation between the food resources and the population of the world. While it was in the course of such a discussion in the early part of the nineteenth century that some of the most important principles of agricultural economics were discovered, the two subjects are related indirectly, if at all. It would be impossible to exaggerate the importance of the problems arising out of the probable future of the world's food supply in relation to its growing population, but these problems belong rather to the study of the economics of population than to that of agriculture.[3]

Finally, the science of agricultural economics must not be confused with the study known as farm management, which is designed to teach practical farmers how to employ their resources to the best advantage. The distinction between the two subjects is not always definitely drawn, even by some of the best authorities. Jouzier, for example, defines *l'économie rurale* as " that branch of agricultural science which teaches the method of regulating the relations of the different elements composing the resources of the cultivator so as to assure the greatest prosperity to the enterprise."[1] This definition seems to be applicable to the art of farm management rather than to the science of agricultural economics, which must have regard not merely to the methods by which farmers can maximise their profits, but also to a consideration of how far the State can, by appropriate measures, assist them to attain prosperity, or encourage them to conduct their business in the interests of the nation as a whole.

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[1] Professor Carver defines rural economics as " that branch of the science of statesmanship which deals with agriculture and rural life as factors in nation-building," *op. cit.*, p. 3. Professor Boyle states, wrongly, in the opinion of the present writer, that " agricultural economics has for its first consideration the welfare of the Republic, and for its second consideration the welfare of agriculture " : *Agricultural Economics*, p. 7. On rural sociology generally see Sims, *Elements of Rural Sociology*.

[2] Ely and Moorhouse, *Elements of Land Economics*.

[3] The literature on the relation between population and food production is very extensive. Among the best books are : Crookes, *The Wheat Problem* ; East, *Mankind at the Crossroads* ; Russell Smith, *The World's Food Resources* Wright, *Population*.

The question may naturally be asked whether there is any profit to be gained from studying economic science in its application to the one industry of agriculture. Economic principles, it may be said, are of universal application, and there is no more to be learnt from studying their operation in the domain of agriculture than in that of any other individual industry. There are several answers to this objection.

In the first place, agriculture has always been the principal industry in the world. The Final Report of the World Economic Conference states that "agriculture is the occupation of the majority of workers throughout the world; its various products represent in value the greater part of human labour, and the exchange of its products against industrial products forms indeed the basis of world trade." It is obvious that every aspect of an industry of such overwhelming importance is deserving of the most careful study; what agricultural economics attempts is to reveal its economic aspects.[2]

Another reason for isolating the agricultural application of economic science is that agricultural production exhibits some peculiar and characteristic features which are not present, or at least are less prominent, in other industries. For example, the law of diminishing returns is of greater importance in farming than in manufacturing operations. The different factors of production are less clearly marked off from each other in agriculture than in manufacturing enterprises ; the dividing line between land and capital, and between wages and profits, is less definite.

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[1] *Op. cit.*, p. 13.

[2] For statistics showing the importance of agriculture in world production see a Memorandum entitled *Agriculture and the International Economic Crisis*, C.E.I. 43, prepared by Messrs. Gautier, Hermes and Lindsay for the International Economic Conference.

Moreover, the study of agricultural economics has been to some extent neglected in the past by writers both on agriculture and on economics. Students of agriculture, intoxicated by the advance of physical science, have devoted practically the whole of their attention to increasing the quantity and quality of both crops and livestock without regard to the question whether such improvements were accompanied by correspondingly increased profits. The fact that agriculture is a business as well as a science was partly forgotten, not only by students of the subject, but also by those responsible for public policy in regard to the assistance of agricultural production. Economists, on the other hand, have devoted the greater part of their attention to the problems of industry and commerce. This is not surprising in view of the fact that the science of economics developed during an age of unprecedented industrial and commercial expansion. The divorce between agriculture and economics has been detrimental to both sciences.[1]

The comparative neglect of agricultural economics has been made up for in recent years by a large output of books and papers devoted to the subject. Students in the United States led the way in this awakening of interest even before the war. The acute depression of the last few years has, however, aroused economists in every European country to the need of a further exploration of the causes underlying agricultural prosperity and depression. Many valuable papers have been published in the journals of English learned societies, and the documentation of the International Economic Conference includes several important monographs on various aspects of the problem. Chairs of agricultural economics have been established in many universities. At a time when so much progress is being made in the study of the subject, it may not be altogether a fruitless task to attempt, however imperfectly and inadequately, to collect and to present in a more or less coherent form the results of the researches and publications that have already taken place. The references given throughout to the authorities consulted will enable the reader to study the subject in further detail than is possible in the present essay, which has no pretence to being anything more than elementary.

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[1] Taylor, *op. cit.*, p. 8 ; Nourse, *Agricultural Economics*, p. 3 ; Wyllie, *Some Popular Fallacies in Farming Economics* ; *Transactions of Highland and Agricultural Society*, 1927, p. 1.

The final justification for a special study of the economic aspects of the agricultural industry is that it may lead to some advance in general economic science. If any of the conclusions of that science, which, as has already been stated, grew up in an industrial or commercial atmosphere, proves inapplicable to agricultural conditions, then its universality is open to question and it may call for restatement or modification. Professor Edwin Nourse very justly observes that "the most careful builder of an economic system cannot felicitate himself upon having achieved a really valid doctrine until he has ascertained the adequacy of his principles to explain the facts of rural as well as urban enterprise."[1]

Economics is sometimes described as the science of prices. Agricultural economics may be described as the science of agricultural prices. The study of prices may be conveniently divided into a study, on the one hand, of general price movements affecting all commodities, and on the other hand of the prices of particular commodities. Similarly, the study of agricultural prices may be divided into the study of the general price movements affecting all classes of agricultural produce and the study of the prices of particular commodities. We shall adopt this division in the following pages. The first chapter will deal with general price movements, the second with the prices of particular commodities, and the third with the methods by means of which public interference may influence prices. The subject of the distribution of the agricultural income is not discussed.

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[1] *Op. cit.*, p. 6.

CHAPTER I

THE PRICES OF AGRICULTURAL PRODUCTS IN GENERAL

THE object of this chapter is to examine the effect on the general level of agricultural prices of those causes which bring about a change in the general level of prices of all commodities. The changes in prices produced by these causes are more important for the agriculturist than changes in the prices of individual commodities which are not part of a general change. The latter may neutralise one another, and the resulting change in the income of the agricultural industry as a whole may be relatively unimportant. But a rise or fall in the general level of agricultural prices must obviously affect the position of every farmer for either good or evil.

The course of prices during the last hundred years is well known. Excellent series of index numbers have made it possible to trace every fluctuation in general as well as in particular prices. A study of these index numbers shows at a glance how close has been the correspondence between the movements of agricultural and general prices. This is shown very clearly in the first diagram printed in the Report of the Committee on Stabilisation of Agricultural Prices, to which the reader is referred.[1] It is unquestionable that two movements so similar must have had their origin in a common cause, and it is equally indisputable that that cause was the variation which took place in the purchasing power of money. The principal cause of such variation was, of course, changes in the quantity of money in circulation.[1]

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[1] See also Enfield, *The Agricultural Crisis*, pp. 21–2, 132; Dampier Whetham, *Politics and the Land*, p. 70. On the construction of index numbers of agricultural prices see the memorandum entitled *Agricultural Problems in their Economic Aspect*, prepared by the International Institute of Agriculture for the International Economic Conference, 1927—this Memorandum will be referred to as C.E.I. 36—and the Memorandum entitled *Agriculture and the International Economic Crisis*, C.E.I. 43, already referred to, *supra*, p. 4. On the English index number see *The Agricultural Output of England and Wales*, 1925, Cmd. 2815, p. 118.

So far no reason has appeared for laying any special emphasis on these general fluctuations in agricultural prices. Indeed, it might be said that the very closeness of the movement of agricultural and general prices renders any separate discussion of the phenomenon so far as it affected agriculture unnecessary. It might be said that the farmer's products are in the same case as the products of any other industry; that they are affected no more and no less than other products by the change in the purchasing power of money; and that any further discussion on the subject would belong rather to the science of money than to that of agricultural economics. Such a position would, however, be incorrect, because there are several distinctive features in agricultural production which render the effects of price changes exceptionally severe. These features are: first, the inelasticity of supply; second, the length of the productive process; and third, the lag between the movements of agricultural and other prices.

The general question of the elasticity of the supply of agricultural products will be discussed in the next chapter. We may anticipate the results of that discussion by stating that, owing to a variety of causes, supply in agricultural production tends to be very inelastic. This is the result partly of the great part played by natural causes, such as weather conditions, in determining the volume of each commodity produced, partly of the chaotic, unorganised condition of the producers and their remoteness from markets, and partly of the reluctance or inability of farmers to vary their output in response to changing price levels. It is principally with the last cause that we are concerned in the present chapter. The principal reason why farmers exhibit this reluctance or inability to respond to changing prices is that the supply of the various factors of production is itself highly inelastic. The supply of the various agents of production is not responsive to changes in the price of agricultural produce. The supply of land in an old country is practically fixed, and even in a new country an increase in the supply of land is obtained only after considerable expenses on clearance, irrigation or drainage. Land, on the other hand, will be abandoned even more slowly than it is brought into cultivation. Land itself is, of course, absolutely immoveable, and capital sunk in land tends to assume a more permanent or fixed form than in manufacture, and the supply of capital, by way of either addition or subtraction, will consequently be less elastic than in other industries. The unwillingness of farmers to abandon capital investments will make them continue production even when prices are falling, and adjustment will be less ready in the downward than in the upward direction. There is therefore a " lag " between the readjustment of production and the new level of prices ; and this lag will be more marked in a period of falling than in a period of rising prices.[1] The supply of labour is likewise highly inelastic, particularly in cases where the farm is worked by the owner and his family. The amount of labour devoted to cultivation will scarcely show any response to price changes for the crops produced. The fact that many farmers are to a great extent self-sufficient further increases the inelasticity of supply, because produce that cannot be sold can often be consumed on the farm itself. Moreover, the chaos in production and marketing by large numbers of small independent units still further reduces the possibility of any response on the supply side to any changes in price movements. Indeed, in many cases, falls in price are met by increases in supply by farmers, who seek to make up by the volume of sales what they lose in price, and the situation may grow cumulatively worse. The individual farmer, on the other hand, who, acting in isolation, reduces his production, may find himself faced with a double loss arising from a smaller output at a lower price.[1]

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[1] Professor Fay in *Great Britain from Adam Smith to the Present Day*, p. 244, says that he "holds with Marshall that between 1820 and 1914 the price movements which are traceable to monetary causes are of secondary importance in the determination of agricultural conditions." The passages from Marshall, however, to which he refers in support of this contention deal solely with changes in the price of wheat, on which, no doubt, monetary influences were comparatively unimportant, and not with changes in the general level of agricultural prices.

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[1] Engberg, *Industrial Prosperity and the Farmer*, p. 25 ; Carver, *Select Readings*, p. 50 ; Enfield, *op. cit.*, p. 114 ; *Report of Business Men's Commission on American Agriculture*, p. 127.

We may conclude that supply in agriculture is highly inelastic, especially when prices are falling. This inelasticity is a feature of the production of each individual crop, but it is even more marked in the case of production in general. Great as are the difficulties of responding to changes in the price of particular products by substituting others in their place, they are nothing compared with the difficulties of slowing down production in general. Output cannot be stopped on a farm as it can in a factory; if the land is not cultivated by man it will produce its own crop of weeds. Moreover, the weaker productive units will not disappear in a period of depression, as they frequently do in industry and commerce, helping by their very disappearance the more efficient units to survive the crisis. The abandonment of a farm implies the abandonment of the home, and will be undertaken far less readily than the abandonment of a workshop. We may conclude, therefore, that the elasticity of the supply of agricultural products in general is even less than that of particular commodities.[2]

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[1] *Report of Business Men's Commission on American Agriculture*, pp. 77, 118–9.

[2] This discussion is based on an excellent article by Mr. H. Belshaw in the *Economic Journal*, March 1926, entitled "The Profit Cycle in Agriculture." In a note on p. 31 Mr. Belshaw gives certain American statistics showing the comparatively small response made by American farmers to the great rise in prices after the War. An interesting correlation table showing similar results is in Engberg, *op. cit.*, p. 34. On the inelasticity of the supply of

The second peculiar feature of agricultural production is the length of the productive process which gives rise to the economic lag between expenditure and receipts. Many of the costs of production are incurred many months before selling the crop. In a period of rising prices this clearly benefits the farmer while it no less clearly injures him when prices are falling. The extent of the economic lag varies with the length of the productive process and with the proportions in which the total cost is spread over the whole period of expenditure. This lag, with the normal methods of farming in the south of England, varies from about seven months for a grass land dairy farm to about fourteen months for a typical arable sheep and corn farm. It is easy to understand why grass farming is looked on as safer than tillage during falling prices.[1]

The third peculiar feature of agricultural production is the lag in instantaneous costs. This is dealt with very lucidly by Mr. Belshaw, who explains that " Even if instantaneous costs and selling prices moved exactly parallel, or the cost of production bore a constant relation to the selling price, the fact of the economic lag in production would ensure something of a windfall gain or loss to the producer; but in fact they do not; there is a strong tendency for instantaneous costs to lag behind selling prices, especially in the

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labour by peasant proprietors see Jouzier, *op. cit.*, p. 35, Pigou, *Industrial Fluctuations*, pp. 178–9, and Memorandum entitled *The Relation of Labour Cost to Total Costs of Production in Agriculture*, which is part of the documentation of the International Economic Conference, C.E.I. 27, p. 17. On elasticity of supply in general see Nourse, *Agricultural Economics*, p. 312, C.E.I. 43, p. 10; *Report of Committee on Stabilisation of Agricultural Prices*, pp. 20–1; Enfield, *op. cit.*, p. 153; Seligman, *Shifting and Incidence of Taxation*, pp. 228–9.

[1] Dampier-Whetham, " The Economics of Agriculture, with Special Reference to the Lag between Expenditure and Receipts," *Journal of Royal Agricultural Society*, vol. 84, p. 122; *Politics and the Land*, pp. 65 *sq.*; " The Economic Lag of Agriculture," in *Economic Journal*, December 1925, p. 537. Dampier-Whetham's method of calculating the lag is criticised by Professor Ashby on the ground that it tends to exaggerate the effect of falling prices and to under-estimate the benefit of rising prices; *Journal of the Royal Agricultural Society*, vol. 86, p. 111.

early stages of boom."[1] Statistical proof of this lag is easy to obtain; many of the charts in Enfield's *The Agricultural Crisis, 1920–23,* clearly indicate its existence; and its importance for American farmers is vividly shown in tables in the Report of the Business Men's Commission on Agriculture.[2] The following table, prepared by the Secretariat of the International Agricultural Commission and reprinted in the Documentation of the International Economic Conference, 1927,[3] is of especial value as representing the weighted average of the figures supplied by a large number of agricultural associations in various countries:

COMPARISON OF PRICE INDEX OF PRODUCE SOLD WITH THE INDEX OF DIFFERENT CLASSES OF ARTICLES PURCHASED BY AGRICULTURE

Year 1925–6. Base 1913–4 = 100.

Classes of Articles.	Index of Prices.	Purchasing Power of Agricultural Produce sold.	Quantity of Agricultural Produce required to purchase these Articles (Addition + Less −)
	Per Cent.	Per Cent.	Per Cent.
Agricultural produce sold	129·8		
Working expenses:			
Machinery and tools	154	84	+ 19
Commercial fertilisers	118	110	− 9
Concentrated fodder	128	101	− 1
Wages in cash	145	90	+ 12
Veterinary expenses	135	96	+ 4
Farm buildings	165	79	+ 27
Total: Working expenses	143·5	90·5	+ 10·6
Domestic consumption:			
Clothing and boots and shoes	182	71	+ 40
Salt, sugar and coffee	156	83	+ 20
Total: Domestic consumption	175·9	73·8	+ 35·5

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[1] *Economic Journal*, March, 1926, p. 34.

[2] Pp. 45, 75.

[3] C.E.I. 43.

This table shows clearly, not only the lag, but the various degrees of intensity which it assumes for different classes of goods. Generally speaking, it may be concluded that prices of manufactured commodities tend to fall less rapidly than those of raw materials, and that the fall in the case of the former will be slower in proportion to the amount of "sheltered" labour employed in their production. Thus agriculture is exploited during falling prices by the labourers in sheltered industries.[1] The figures show also how the purchasing power of agricultural products is affected by the lag, which thus produces a twofold cumulative effect. The farmer's money income falls relatively to that of other members of the community, and every article which he purchases with this diminished income stands at a price level higher than that of the things he himself has to sell. This disequilibrium is further intensified by the fact that the farmer usually sells in the wholesale and buys in the retail market. It is well known that retail prices lag behind wholesale.[2] Mr. Belshaw, in the article already quoted, examines each element in the farmer's costs of production and concludes that "the relevance of these items of expenditure consists in the length of time which passes before a new level of charges in respect of them must be incurred, together with the degree of interim change in this level. In other words, it depends on the length of time during which these charges remain fixed." The charges are arranged in approximately the following order of fixity: "(1) Rent of land in the case of a tenant or interest on capital invested in lands or improvements in the case of a farming owner. (2) Interest on capital invested other than in land, *i.e.* in stock, implements, etc. (3) Depreciation on these, or the replacement of such capital of this sort as is worn out. (4) Labour. (5) 'Incidental' expenses in the nature of seeds, foodstuffs, fertilisers and so on."[1] Clearly the extent to which the farmer will be affected by the instantaneous lag will depend on the proportions in which his total expenditure is divided among the charges in these five classes.

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[1] Cassel, *Recent Monopolistic Tendencies in Industry and Trade*, C.E.C.P. 98, and see *Memorandum on Production and Trade*, 1913 and 1923–6.

[2] *Final Report of Linlithgow Committee*, p. 38.

The three peculiarities which we have mentioned—the inelasticity of supply, the economic lag, and the lag in instantaneous costs—render agriculture extremely sensitive to rising and falling prices. The trade cycle in agriculture is a cycle in profits rather than in output; a reduction in the standard of living of producers rather than unemployment, the dominant effect in modern manufacturing industry, reflects the effect of falling prices. In a system of capitalised farming some unemployment may also appear among agricultural labourers; the farmer, attempting to combat low prices by less intensive cultivation, will lay his land down to grass as rapidly as circumstances permit, and the demand for hired labour will diminish. Again, when land is held by tenants on comparatively short leases, some part of the shock will be transmitted to the landowner in reduction of rent.[2] But the dominant type of farmer is the peasant proprietor who hires little or no labour and pays no rent, and consequently has no buffer to protect him from the full effect of the fall, which is reflected in the standard of living of himself and his family. Cases are on record of peasant proprietors working for whole seasons for negative wages.[3]

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[1] P. 35. And see an article on "Agriculture and the Price Level," by Mr. D. A. Harkness, in *Economic Journal*, March 1928. The relative movements of prices in the United States of these different elements of cost are discussed, with statistical charts, in the *Report of the Business Men's Commission on American Agriculture*, pp. 75–88.

[2] See Dampier-Whetham, *Politics and the Land*, pp. 113–14; *Economic Journal*, March 1928, p. 57; and the *Report of the Central Landowners' Association on Agricultural Policy*, 1928.

[3] Belshaw, *op. cit.*, pp. 37–8. *The Report of the Business Commission on American Agriculture*, pp. 110–16, contains charts showing the instability of farm incomes in the United States, and excellent tables showing the fluctuations in net incomes of farmers in Germany from 1912 to 1924 are to be found in the Memorandum entitled *Agriculture and the International Economic Crisis*, C.E.I. 43. The small farmer is of course insensitive to price fluctuations in so far as he consumes the produce of his own farm.

It may not unnaturally be asked why so much emphasis has been laid on the effect of a fall of prices on the farmer and so little on the effects of a rise. Do not his differential gains in the rise compensate him for his differential losses in the fall ? It is true that the effects of the slump are rendered less onerous by the preceding boom than they would be if no boom had occurred ; indeed, the savings put aside during the good years may stave off actual bankruptcy during the bad. But, apart from this, the two movements do little in the way of mutual compensation. For one thing, the turn in the tide of prices probably overtakes the farmer unawares. Farmers live remote from markets and market news and are not so sensitive to changes in market conditions as producers in other industries. Intoxicated by the optimism of good prices they are tempted to go on increasing their output even after the peak in the movement has been reached, trusting that any set-back which they observe is but a temporary hesitation pending a further rise. Their losses in the fall are thus intensified, and probably more than the extra profits made in the rise are absorbed in keeping them out of bankruptcy.[1] Moreover, as we have already pointed out, adjustments are made more rapidly in periods of expansion than of contraction. Many more or less permanent charges may have been incurred under the exhilaration of high prices which afterwards grow heavier owing to the combined effect of lower profits and the appreciation in the value of the currency unit in which the charges have to be paid. Especially distressing is the lot of those who have borrowed money in order to purchase land during the period of high prices. Among such farmers bankruptcies and forced sales become the order of the day.[2] Finally, the psychological effects of the slump are serious, and far from transitory. " Falling prices undermine confidence. In the absence of confidence farming deteriorates, and the farmer is slow to recognise the signs of improvement when prices

[1] Enfield, *op. cit.*, p. 114.

[2] Belshaw, *op. cit.*, pp. 47–8.

once more show an upward tendency. . . . The cumulative effect of all these factors tends to prolong the harmful consequences of a depression long after the causes which brought it about have ceased to operate." The very uncertainty of the course of future prices tempts farmers to cultivate extensively, and thus the volume of employment is unnecessarily decreased.[1]

It is impossible to doubt that the net effect of the cycle is a loss to the agricultural industry. The productive resources of the community are misdirected under the encouragement of artificial stimulants, and the consequent readjustments necessarily entail losses both on the part of farmers and of those who have advanced the capital and credit needed to finance these misdirected developments. Nor are the evils of this instability confined to the agricultural industry alone. The interdependence between agriculture, industry and commerce is so close that it is impossible for one to enjoy lasting prosperity independent of the others. The diminution in the purchasing power of the agricultural population reacts upon industrial production, and therefore increases unemployment, which in its turn reduces the demand for agricultural products. Thus there is set up a complete vicious circle.[2]

The conclusion that the physical output of agricultural production as a whole varies less in the course of the trade cycle than that of manufacturing industry does not prove that the cycle is less serious in one case than in the other ; it points merely to the fact, already mentioned, that the change is to be measured in terms of profit rather than in terms of output.[3] Every student of agricultural economics is agreed that the gains derived during the boom do not in fact compensate for the losses suffered during the slump, and that the farmer has therefore a more pressing and urgent need for some policy of price stabilisation than any other member of society. "The agriculturist," states the Final Report of the World Economic Conference, "should find his just remuneration, not through speculation, but in the regularity of prices enabling him to reckon on a legitimate return equivalent to that accorded to other producers."[1] Unfortunately, the formulation and execution of such a policy is outside the power of the farming classes even if they were fully organised for joint action. In this matter their fortune lies in the power of the bankers and statesmen who control the purchasing power of money, if indeed it is susceptible to conscious control at all. These high matters of monetary theory lie outside the scope of the agricultural economist, however conscious he may be of their vital importance.[2]

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[1] *Report of Committee on Stabilization of Agricultural Prices*, pp. 14–15, 51. The effects of falling prices are admirably summarised on p. 14 of this Report. Enfield, *op. cit.*, p. 102.

[2] *Final Report of International Economic Conference*, p. 47 ; and see *Report of Liberal Industrial Inquiry*, p. 322.

[3] See Belshaw, *op. cit.*, p. 32 n.

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[1] P. 48.

[2] The converse question of how far the fluctuations of the trade cycle are themselves caused by variations in agricultural output does not arise for discussion in this connection; see Pigou, *Industrial Fluctuations*, pp. 36–41; Carver, *Select Readings in Rural Economics*, pp. 5 *sq.*; Belshaw, *op. cit.*, p. 32 n; Robertson, *Industrial Fluctuation*.

CHAPTER II

THE PRICES OF PARTICULAR AGRICULTURAL PRODUCTS

THE discussion in the last chapter led to the conclusion that the movements in the general agricultural price level are due to causes over which the farmer, whether acting alone or in combination with his fellows, has no control. The next matter for inquiry is the cause of the movements of the prices of particular commodities, relatively to each other and to the general price level. It is a fundamental principle of economics that, whereas movements in general prices are primarily caused by monetary influences, movements in prices of particular commodities are determined by the conditions of demand and supply. For the purpose of the following discussion a knowledge on the part of the reader of the general laws by which the conditions of demand and supply influence prices in long and in short periods is assumed, and an attempt is made to indicate the peculiarities which distinguish the demand for and the supply of agricultural products from those of other types of commodity. It may be remarked incidentally that agricultural prices are almost always competitive and that we need not study monopolistic conditions of supply. While demand is, if anything, more important than supply in conferring value on goods and thereby fixing their price, it will receive a relatively short space in the discussion, first, because the peculiarities of agricultural demand are less striking than those of agricultural supply, and secondly, because the conditions of demand are practically outside the control of the agricultural industry. From the point of view of the farmer, the demand for his products may be regarded as something which he has no power to influence; his only chance of influencing the price of his products lies on the side of the supply. This, of course, applies to every type of producer as well as the farmer, but it applies to agricultural producers with especial force because of the narrow limits within which stimulation of demand for foodstuffs by means of advertising is confined. The farmer, therefore, is peculiarly at the mercy of forces outside his own control. Not only is he powerless to influence the general price level, but he is also practically unable to influence the demand conditions for the commodities which he produces. Hence arises the need for the payment of more than ordinary attention to the conditions of the supply of agricultural products, which is the only part of the price-fixing machinery even partly within the farmer's own control.

Section 1. *The Demand for Agricultural Products*

The study of the demand for agricultural products, as for other goods, is rendered difficult by the inadequacy of the statistics of consumption. It is not easy to ascertain how much each person spends on any particular commodity, and the effect of changes of price on demand is not always measurable. The International Institute of Agriculture, in the Memorandum which it presented to the International Economic Conference in 1927, discussing the statistical aspect of the agricultural problem, states that, whereas the data regarding production are increasingly accurate and complete, "the data regarding consumption, the other term of the equation, are not so satisfactory." The problem is stated to be very difficult. "In the first place it is difficult to ascertain what quantities of each product are actually consumed, and it is still more difficult to determine how far consumption is affected by the variation in the quantity of the different products placed on the market."[1] The Committee appointed by the Empire Marketing Board to inquire into Agricultural Economics in the Empire laid great stress on the necessity for research on the demand side of the market. The Report of this Committee states that "the possibility of a statistical service on the movements of demand is somewhat remote. . . . Present statistics give supply and price, price being presumably the reflection of the demand at that time and place upon the given supply. This leaves the analysis of market conditions obviously unsatisfactory, for, demand not being constant, it thereby gives a variable of which nothing whatever is known and over which agriculturists have no control." Particular aspects of demand indicated by the Committee as suitable for special research are the influence of changes in the purchasing power of different classes, the seasonal variations in consumption, and the competition between different commodities.[1] In spite of this great deficiency of statistical material, it is possible to reach several general conclusions regarding the nature of the demand for agricultural produce.

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[1] C.E.I. 36, p. 9.

The general law of elasticity of demand is stated by Marshall as follows: "The elasticity of demand is great for high prices, and great or at least considerable for medium prices; but it declines as the price falls; and gradually fades away if the fall goes so far that satiety level is reached. This rule appears to hold with regard to nearly all commodities and with regard to the demand of every class; save only that the level at which high prices end and low prices begin is different for different classes; and so again is the level at which low prices end and very low prices begin."[2] This general principle is capable of being applied to determine the condition of elasticity of demand for agricultural produce. Marshall himself gives several illustrations relating to the consumption of such products.[1]

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[1] *Report*, pp. 15–16, and see Marshall, *Principles*, p. 113; Engberg, *op. cit.* p. 60; Lehfeldt, in *Economic Journal*, 1914, p. 212; Taussig, *International Trade*, pp. 305–6. On attempts to measure demand see Pigou, *Economics of Welfare*, Appendix II, and a paper by Professor Irving Fisher in *Economic Essays in Honour of J. B. Clark*.

[2] *Principles*, p. 103.

According to this principle the elasticity of demand for any commodity will depend upon (1) the price of the commodity, (2) the purchasing power of the purchaser, and (3) the share of the latter's total expenditure which he spends on the commodity. At each end of the scale there are objects the demand for which is highly inelastic. Salt is so cheap relatively to the income even of the poor, and accounts for such a small portion of each person's total expenditure, that it possesses a very inelastic demand schedule; while rich and luxurious foods possess a similar demand schedule because they are largely consumed for purposes of ostentation and chiefly by the small class of people who would consume them at any price. Between these two extremes are innumerable gradations.

In considering the demand for agricultural produce we must distinguish between foodstuffs and the raw materials of industrial production. Foodstuffs possess certain characteristics as a class. They are consumed regularly and consistently. The possibilities of curtailing the amount of food consumed are comparatively small, and food is usually the last item in any person's budget to be economised in times of need. This fact sets a limit on the downward variation in the demand for food. A similar limitation is set on its upward expansion by the fact that man's physical needs are soon satisfied and that in periods of prosperity expenditure will probably be increased in other directions rather than in increasing the quantity of food consumed. As one writer puts it, "the saturation point in food is reached three times a day."[2] It is probable that the consumption of food will be contracted by a rise in price more readily than it will be expanded by a fall. In this respect the elasticity of demand for farm produce differs from the elasticity of supply, which, as we saw above, is greater in rising than in falling prices. In either case the farmer stands to lose more readily than to gain.[1]

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[1] A note on page 106 of the *Principles* gives a graphical representation of a demand schedule for wheat, based on the assumptions made by Gregory King.

[2] Boyle, *Efficient Marketing in Agriculture*, p. 46.

The demand for agricultural produce which forms the raw material of industrial production is much more elastic.[2] The saturation point in such things as clothing is not reached very rapidly, and the possibility of an increased demand for cotton, linen and silk goods is great. The demand for these articles, moreover, is much more sensitive to the successive phases of the trade cycle than the demand for food; the downward as well as the upward variation in the demand for these articles is relatively large. One reason for this is that the purchase of most manufactured goods can be easily postponed in bad times. An old suit or an old motor tyre can be continued in use, whereas food is essentially an urgent recurrent need. The Stevenson rubber restriction scheme broke down partly owing to the large increase which took place in the manufacture of reclaimed rubber. There is also a greater possibility of substitutes with a non-agricultural origin being found for manufactured goods than for foodstuffs. The horse may be replaced by the motor, but there is no sign of any machine taking the place of the pig or the cow. Generally speaking, it may be said that the demand for produce that forms the raw material of industrial production is a good deal less steady and more sensitive than that for food. It is also more liable to be destroyed altogether by the invention of substitutes; for example, the demand for cotton and flax is likely to suffer as a consequence of the progress of the artificial silk industry. The fact, however, that the demand for such products also offers great openings for expansion makes it a matter of importance that farmers and their organisations should study the possibilities of utilising their products for industrial purposes.[1]

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[1] Ashby, in *Journal of Royal Agricultural Society*, vol. 86, p. 105; Engberg, *op. cit.*, p. 54.

[2] Engberg, *op. cit.*, p. 55.

It is clear that the elasticity of the demand for agricultural produce as a whole will be influenced by the proportions in which it is composed of these two classes. The production of some countries is composed almost entirely of foodstuffs, while that of others may include large quantities of cotton, flax or rubber. Some articles afford a joint supply of commodities of both sorts. Cattle, for example, supply both food and leather. Taking the agricultural produce of the world as a whole, it may be concluded that by far the greater part is composed of foodstuffs. The demand for it therefore tends to be inelastic.[2]

It is also necessary to distinguish between the demand for any single foodstuff and that for foodstuffs as a whole. Changes in the price of any one article may give rise to large changes of demand for that particular article. A rise in the price of beef, for example, will almost certainly diminish its consumption and increase the consumption of mutton. Here the total demand for meat may be comparatively slightly changed. Again, a rise in the price of all classes of meat may diminish the demand for meat and increase that for wheat and other cereal foods. Here again, however, the change in the demand for food as a whole may be comparatively slight. What happens is that one type of food is substituted for another. If the price of food as a whole rises, no such substitution is any longer possible. Hence we may conclude that the elasticity of the demand for the agricultural produce of any group of farmers will vary inversely with the number of different foodstuffs they produce.[3]

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[1] Belshaw, in *Economic Journal*, March 1926, pp. 45–6 ; Nourse, *Agricultural Economics*, p. 459 ; Carver, *Select Readings in Rural Economics*, p. 732 ; *Report of Business Men's Commission on American Agriculture*, pp. 25, 98, 141, 268.

[2] Engberg, *op. cit.*, p. 50.

[3] *Ibid.* pp. 15–16 ; Boyle, *op. cit.*, pp. 5, 9.

The elasticity of the demand for anything varies, as we said, with changes in the purchasing power of the class who consume it. A general rise in real wages, for example, has the result of changing the relative cheapness or dearness of different commodities for the working class, and hence of changing the elasticity of the demand for them. Such a rise of wages, for instance, may make wheat so relatively cheap that satiety is soon reached and a new demand for meat arises. American statistics prove that, when purchasing power declines or increases, sales of meat are affected. Studies of family budgets show that the workers earning high wages spend a larger part of their income on meat and a smaller part on cereals than less well-paid workers. The following table[1] illustrates this point :

Food	Percentage spent when total income was :	
	$ 7·25	$ 5·91
Meat, fish, eggs	34·6	18·1
Milk, cheese	20·2	26·1
Bread, cereals	11·3	15·1

The effect of changes in demand consequent on changes in purchasing power is frequently difficult to prove statistically, because the new demand may be directed towards a different quality rather than a different quantity of the commodity. As soon as satiety point has been reached in respect of the more common articles of consumption, improvements in quality will be demanded. Another possibility is that the change may show itself in more exacting requirements respecting the manner in which the food is cooked or served. Such non-quantitative changes in demand are of relatively small importance to the producer.[1] On the other hand, a period of declining prosperity may be reflected in an increased demand for goods of a poor quality. For example, pork tends to be substituted for more palatable meat in the United States when employment conditions are bad.[2] One paradoxical case of an increase in price actually causing an increase in demand is to be met with when the price of wheat in a poor country is raised. The result of such a rise may be so severely to reduce the demand for the more expensive articles of food as to cause a larger quantity of wheat to be consumed than before the rise took place.[3]

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[1] From Miss Winslow's *Purchasing Power of the Consumer*, p. 187, quoted in Engberg, *op. cit.*, p. 60. On "Engel's Law" regarding the distribution of expenditure by persons of different incomes see Marshall's *Principles*, p. 115. See also the paper on *The Live Stock Industry and its Development*, read by Dr. J. S. Gordon at the British Association, 1928, p. 8.

In estimating the influence of changes in the purchasing power of consumers on the aggregate demand for food, three considerations must be borne in mind. The first is that the incomes of large classes in the community are stable and not affected by the fluctuations of the trade cycle. For example, all persons paid annual salaries belong to this class. When allowance is made for the connection between changing prices and the prosperity of the industrial population, it would appear that the existence of such a stable income tends to counterbalance the changes in the demand of those whose earnings are affected by the trade cycle.[4] Secondly, the incomes which fluctuate most with the changes in the trade cycle are those of the profit-earning class, the elasticity of whose demand for the commonest types of food is very small. Thirdly, such variations in demand as do occur are to a large extent either non-quantitative, being directed to improvements in quality or the method of preparation of food, or else substitutions of one class of food for another rather than additions to the demand for food as a whole. The elasticity of demand for food as a whole arising out of changes in purchasing power is consequently less than might at first appear.

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[1] Engberg, *op. cit.*, pp. 55–6 ; Boyle, *op. cit.*, p. 64.

[2] Engberg, *op. cit.*, p. 203.

[3] Marshall, *Official Papers*, p. 382 ; Ashby, in *Journal of Royal Agricultural Society*, vol. 86, p. 102.

[4] Engberg, *op. cit.*, p. 63.

The demand for particular commodities is liable to be influenced by a great number of factors. Changes of fashion and the whims and caprices of fastidious consumers may cause variations in demand, which may likewise be caused by temperance and hygienic movements. It is easy to see how the demand for hops will be affected by the introduction of prohibition, and how the quantity of milk consumed will be increased if a " drink more milk " campaign is conducted by the medical profession.[1]

Demand may be stimulated within certain limits by action on the part of the producers. Advertising may materially increase the sales of certain types of produce, especially if it is accompanied by grading and standardisation. The public are more ready to purchase articles of standardised quality than articles which have to be inspected before purchase. It is for this reason that the most successful advertising campaigns have been those in respect of goods bearing a definite mark or brand. Conspicuous examples of the stimulation of demand by advertising are the campaigns of the American Cranberry Exchange and the California Fruit Growers' Exchange. Generally, of course, the increased demand for the advertised produce is gained at the expense of some other article of food ; it is a substituted rather than an additional demand. The limits within which the demand for agricultural produce as a whole can be increased by advertising must necessarily be rather narrow. It must always be borne in mind, moreover, that the great gain from advertising manufactured products, namely, cheap production arising from large scale output and resulting reduction in price, does not apply, to anything like the same degree, to agricultural products.[2]

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[1] Boyle, *op. cit.*, pp. 19, 233–4.

[2] Macklin, *op. cit.*, pp. 72–9 ; Taylor, *op. cit.*, pp. 27, 434 ; Boyle, *op. cit.*, pp. 17 *sq.*, 22 *sq.*, 241 ; Nourse, *op. cit.*, pp. 107–14. The *Preliminary Report on Marketing* published in 1925 by the International Institute of Agriculture goes so far as to include the stimulation of demand by advertising among the essential functions of marketing.

We are now in a position to state a general conclusion on the elasticity of the demand for agricultural produce. That demand tends to be more inelastic the greater the proportion occupied by food in agricultural output, and the cheaper is the price of food relatively to the purchasing power of the consumers. As it is unquestionable that by far the greater part of agricultural output does consist of food and also that the tendency of progress is to cheapen food relatively to the purchasing power of the working class, it is clear that the demand for agricultural produce tends to be very inelastic.

One result of this inelasticity is that the price of agricultural produce varies principally with variations in supply. We shall see later that such variations are caused by numerous factors outside human control, such, for example, as rainfall, sunshine, and plant and animal diseases. The result of an inelastic demand operating on a very variable supply is to produce large fluctuations in prices. One very good example of this tendency is to be seen in the case of potatoes, the demand for which is very stable and the supply of which is sensitive to numerous physical factors. The price of potatoes consequently fluctuates violently from year to year.[1]

The extent of these fluctuations varies inversely with the width of the market for the commodity, in accordance with Marshall's general principle.[2] The market may be narrow in respect of time or in respect of space. An example of a market limited in respect of time is that for perishable commodities. The fluctuations in the price of perishable goods are therefore likely to be greater than in goods which can be stored. One reason for this is that middlemen do not absorb so much of the shock of price changes of perishable as of more permanent goods.[3] The market for perishables is likely to be narrow in respect of space as well as in respect of time, because such goods cannot be transported without damage. Several non-perishable goods may also suffer from a narrow market because they are bulky in proportion to their value or because they are not easily sold by sample or description. Thus the market for potatoes is narrower than that for wheat, and the fluctuations in their price more violent. An example of a very narrow market where the demand is very inelastic is provided by the case of English hops, the only purchasers of which are the breweries whose output varies but little from year to year. The price of hops, therefore, depends almost entirely on the supply conditions. A " good " year with high yields has frequently involved the growers in widespread losses or even disaster.[1] If the market is sufficiently wide, changes in demand in various regions are frequently compensating.[2] Protective tariffs by narrowing the market increase fluctuations.[3]

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[1] Peake, *Some Money Market Statistics*, p. 64 ; Ashby, in *Journal of Royal Agricultural Society*, vol. 86, p. 101 ; Beveridge, *British Food Control*, p. 153.

[2] *Principles*, p. 328.

[3] Engberg, *op. cit.*, p. 67.

The conclusions arrived at are : (1) that the demand for agricultural products is inelastic, (2) that such inelasticity operating upon a variable supply causes wide fluctuations in price, and (3) that the extent of these fluctuations varies inversely with the width of the market.[4]

Section 2. *The Inelasticity of Supply in Agriculture*

Supplies of agricultural produce, as of every other type of commodity, are the result of the expectation of profits on the part of producers. Profit is the universal end of agricultural production as of production in every other industry, although the profit-making aim is less obvious, especially when farming is partly on a subsistence basis, and only a small part of the produce is actually sold. However, even in this case, profit though not consciously reckoned in terms of money, is still the dominant aim of the producer, who desires his income to be maximised in relation to his outlay. A certain difference of opinion is to be found among various writers as to how this profit can best be measured; while some would make maximum profit per acre the criterion of success, others prefer to look at maximum profit per unit of labour employed or capital invested. It will be explained later that these different views are not incapable of reconciliation; the point to be noticed here is that all authorities agree that profit, however it may be measured, is the ultimate aim of the agricultural producer. The increase of gross yields may be a matter of greater importance to the State or community, but the individual farmer will always be primarily concerned with maximising his net profits rather than his gross yields.[1]

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[1] The remarkable fluctuations in the price of hops are shown in tables in the *Report on the Stabilization of Agricultural Prices*, p. 40.

[2] Engberg, *op. cit.*, p. 79.

[3] Nourse, *op. cit.*, p. 461.

[4] An excellent article by Thompson, entitled " The Nature of the Demand for Agricultural Products," from the *Journal of Political Economy*, vol. 24, is reprinted by Nourse, *op. cit.*, pp. 456 *sq.* This writer makes the point that the margin for contracting consumption is greatest when the consumers are people of wasteful habits ; the possibility of contracting consumption is narrower in the case of frugal people.

The adoption of the most profitable course in response to changing prices is more slow in agriculture than in other industries. We have already explained the great inelasticity of supply arising out of the inelasticity of the supply of the principal factors of production, and have shown how this affects the farmer in attempting to adjust his output in periods of falling prices. While the inelasticity arising from this cause is greatest in the case of a change in the total production in response to changes in the general price level, it is great also in the case of changes in the production of individual crops. In this case, also, the elasticity of supply will be less in the case of falling than of rising prices. The very inelasticity of demand for agricultural products itself operates as a check on rapid adjustment of supply, because it is always possible to sell most crops at some price, however low; it is only in extremely rare cases that agricultural products become as absolutely unsaleable as manufactured goods during a severe depression.[1] Moreover, the possibility of substitution in agricultural production is limited ; alternative crops or products are not always available, and regard must be had to the course of the rotation.[2]

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[1] Nourse says that "agriculture aims not at bigger corn and fatter hogs as such, but at large financial net returns," *op. cit.*, p. 10; and see Spillman, *The Law of Diminishing Returns*, p. 42; Rew, *op. cit.*, p. 12; Edgeworth, *Papers*, i. p. 97.

The elasticity of supply is further reduced by the great difficulty of ascertaining the expense of alternative procedures. This is part of the general difficulty of costing in agriculture to which further reference will be made. Moreover, the production process is so prolonged that the farmer has no guarantee that conditions of demand may not again have changed before the result of his adjustments has been realised.[3] Farmers live remote from the market and are not so cognisant of market changes as producers in other industries. Peasant proprietors in particular who consume a large part of their own produce are particularly insensitive to variations in the market. If the worst comes to the worst they can always consume a large part of their unsold produce themselves. Production is carried on by large numbers of independent producers acting without any co-ordination, and changes therefore in the total supply of the group can only be infinitesimally achieved by the action of individual producers. This last disability can be surmounted to some extent by means of co-operative organisation, one of the functions of which is to control production with a view to regulating the supply of products in accordance with the actual or anticipated demand. The individual farmer, acting in isolation, who reduces the area under any crop in response to price changes, may suffer a double loss through having to sell a reduced quantity at an unsatisfactory price.

All the foregoing factors tend to keep the supply of agricultural products highly inelastic, but even their combined effect is possibly not so great as the remaining factor to be considered, namely, the extent to which the volume of agricultural output is affected by conditions outside the farmer's control. Sunshine, rainfall, plant and animal diseases all affect agricultural production to an extent far greater than any conscious action on the part of man. The actual acreage under crops may be affected by the weather conditions which may influence the farmer's planting programme, but the principal effect of these physical factors is on crop yields. Engberg[1] gives some striking figures showing the coefficients of variation in crop yields, and an English writer is of opinion that 75 per cent. of these variations in yields are the result of weather conditions.[2] The Report on the Agricultural Output of England and Wales in 1925 states that the variation in yields which took place between 1885 and 1925 was due " in the main to climatic conditions over which the farmer has no control."[3] The physical risks of production can sometimes be diminished or their incidence shifted. They can be diminished either by means of scientific inventions or by action on the part of public authorities. Examples of scientific inventions that tend to reduce these risks are discoveries in botanical and veterinary science such as spraying potatoes and dipping of sheep and the production of varieties immune to disease; and examples of public action with this object in view are State schemes of drainage or irrigation aimed at the prevention of flooding and of drought respectively. The incidence of the risks can be shifted by means of insurance, conspicuous examples of which are insurance against live stock mortality and against damage to crops from hail. Such insurance is frequently undertaken by co-operative associations, and forms one of the most important branches of co-operative organisation in many countries. It is impossible, however, in the present state of scientific knowledge, to reduce the physical risks of production or to shift their incidence very materially, and they still remain the major factor in producing wide variations in the yield and quality of farm produce from year to year.

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[1] Engberg, *op. cit.*, p. 21.

[2] *Ibid.* p. 28.

[3] *Ibid.* p. 32.

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[1] *Op. cit.*, pp. 41–2.

[2] Wyllie, in *Transactions of Agricultural and Highland Society*, 1927, p. 13.

[3] Cmd. 2815, p. 19.

The joint result of the human factors making for inelasticity of supply and of the physical factors making for wide variations outside human control is that the supply of agricultural goods adjusts itself far less readily to changes in conditions of demand than that of manufactured products. The trade cycle in agriculture is therefore, as we said before, a profit cycle rather than a production cycle. The result of the wide variations in profits is that large numbers of farmers actually operate for comparatively long periods without realising any profit at all. In the case of peasant proprietors the absence of profit is registered in a lowered standard of living, while in the case of tenant farmers it is registered in a gradual depreciation or waste of land owing to failure to make the necessary replacements and repairs. We may conclude that, owing to the peculiar conditions of supply which we have enumerated, the price of agricultural products varies with the supply rather than the supply with the price.[1] Of course this conclusion applies principally to comparatively short periods; for long periods of changed prices the agricultural industry will tend to adapt itself to new conditions in precisely the same way as any other industry. The most striking example of such a change is the agricultural revolution which took place in the United Kingdom in the latter half of the nineteenth century, when the whole farming system was radically altered in response to the change in the relative price movements of animal and vegetable products.

In spite of the fact that profits fluctuate so widely, and the fact that the actual course adopted is frequently one calculated not to yield a profit, it remains true that the farming community as a whole does attempt, in spite of many failures, delays, maladjustments and difficulties, to maximise the profit of the industry. The measure of profit may be roughly stated to be the difference between what the farmer gets for his produce and what he spends in order to obtain it—in other words, the difference between the value of what he puts into the land and of what he takes out of it. The amount of this difference, that constitutes the farmer's profit, depends upon the volume of his output and the value of each unit of output in relation to the cost incurred in obtaining it. Every unit of output is not obtained at the same cost; agricultural production, in other words, does not obey the law of constant returns. At the beginning of our inquiry into the farmer's profit we are faced with the problem, therefore, of discovering the ratio between the cost and the yield of successive units of production.

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[1] Boyle gives an interesting diagram showing the relation between the yields and the prices of all American crops from 1866 to 1915, *Agricultural Economics*, p. 226.

Section 3. *The Law of Diminishing Returns*

The law of diminishing returns, or, as it is sometimes called, of increasing cost, is the most important principle in the science of agricultural economics. This law presents two aspects, first, diminishing returns in yields, and second, diminishing returns in profits. In other words, there is a physical and an economic law of diminishing returns. There is a further use of the same term in relation to the long period secular relations between the growth of food production and of population. It was in the course of the discussion on this question in the early part of last century that the law of diminishing returns, in its strict sense, was formulated. Nevertheless, as already indicated in the Introduction, the question of the long period changes in food supply and population belongs to the problems of population rather than to those of agricultural economics. We shall not, therefore, refer further to the third aspect of the law.[1] It is with the economic law of diminishing returns in profits that the agricultural economist is mainly concerned, but the study of this law must be approached through a preliminary study of the physical law which underlies it. The physical aspect is the primary fundamental manifestation of the law of diminishing returns, which, as Marshall puts it, " has to do not with the value of the produce raised but only with its amount."[1]

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[1] See Patton, *Diminishing Returns in Agriculture*, chap. vii.; Cannan, *Theories of Production and Distribution*, pp. 144 *sq.*; Dampier-Whetham, *Politics and the Land*, pp. 181 *sq.*; Marshall, *Principles*, p. 166.

Recent writers have pointed out that a tendency to diminishing returns is observable in all natural phenomena. Mr. Frecheville, in an excellent article in the Journal of the Royal Agricultural Society, says that : " The idea represented by this law is in the broadest sense true of all spheres of human activity. In psychology the law has been shown to hold, and in fact it may be considered almost as a principle of Nature, as a general expression of the fact that whatever field of activity we are considering there is a stage when further increments of effort do not yield a proportional return, and finally there comes a point when no further response can be obtained no matter how many increments of effort are applied."[2] Professor Edgeworth states that "the phenomenon of diminishing returns has all manner of causes except and besides those botanical ones which are characteristic of the law in its first and still most important form relating to agriculture."[3] It is with those botanical causes that we are concerned. The law of diminishing returns may apply to all the phenomena of nature, but in ordinary parlance it is used to denote an agricultural phenomenon. " When the productiveness of land is spoken of," Marshall truly observes, " our first thoughts turn to its agricultural use."[4] The botanical causes which give rise to the law in agriculture are the mechanical and chemical properties of the soil. The law may be properly called " the law of the soil."[5]

The following definition of diminishing returns by Professor Edgeworth has been accepted by the latest writer on the subject as theoretically perfect: "When, on the application of two successive equal doses of productive power, the increment of produce due to the first dose is less than the additional increment due to the second, the law of increasing returns is said to act; and conversely it is a case of decreasing returns when the increment due to the first dose is greater than the increment due to the second."[1] It is clear from this definition that the law applies primarily to marginal, and not to total or average returns. The distinction between these three types of return is clearly explained by Professor Patton: "Total returns signify the total products, outputs or returns corresponding to specific amounts of effort or outlay; average returns mean the quotients obtained by dividing total outputs by the appropriate inputs; marginal returns mean the ratio of an increment of output to a finite or infinitesimal increment which gave rise to it, when these increments are located at the margin of intensification of input."[2] The increase or decrease in the average product per unit of productive power is given precedence by the principal American economists, Walker, Seligman, and others, but Edgeworth says that the definition as thus presented is secondary to the primary definition relating to marginal changes.[3]

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[1] *Principles*, p. 149.

[2] Vol. 87, p. 89.

[3] *Papers*, i. 81.

[4] *Principles*, p. 145.

[5] Lang, *Lehre vom Bodengesetz*, Jena, 1914.

That agricultural production obeys the law of diminishing returns has been demonstrated experimentally and is unquestionable. The ratio between successive increments of input and output in agriculture is expressed in a formula known as Mitscherlich's Law, which was discovered independently by Dr. Spillman. This law states that: "The increments in yield corresponding to successive equal increments in fertiliser applied to a crop tend to constitute the terms of a decreasing geometric series; thus if R represent the ratio of the second increment to the first, then the ratio of the third increment to the second, of the fourth to the third, and so on is also R."[1] Certain problems relating to the physical law are unsettled and are still matters of dispute: for example, the existence of an initial stage of increasing return is questionable,[2] and it is doubtful how far the law would stand the test of simultaneous variations in the application of more than one factor.[3] But in spite of these minor matters of controversy, the main law holds good, namely, that, taking the arts of agriculture as they are, " the application of increased capital and labour to land will add a less than proportionate amount to the produce raised."[4]

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[1] *Papers*, i. 63, adapted by Patton, *op. cit.*, p. 17.

[2] *Op. cit.*, pp. 17–18.

[3] *Op. cit.*, p. 67.

The law in the sense in which it is used in agricultural economics must be distinguished from the analogous but wider principle that any agent of production which is employed in undue proportion in relation to the other agents will tend to yield a diminishing return. Marshall points out that : " if a manufacturer expends an inappropriately large amount of his resources on machinery, so that a considerable part of it is habitually idle ; or on buildings, so that a considerable part of his space is not well filled ; or on his office staff, so that he has to employ some of them on work that is not worth what it costs ; then his excessive expenditure in that particular direction will not be as remunerative as his previous expenditure had been ; and it may be said to yield him a ' diminishing return.' "[5] This is but another way of saying that the principle of substitution has not been properly applied in the distribution of the producer's resources, and that a redistribution of his resources may yield an increased return. But the law of diminishing returns, in its narrower sense, assumes that the optimum distribution of resources has been observed, and that the principle of substitution has been properly applied. The farmer has to make two main sets of decisions: first, what crops he will grow, and second, in what manner he will grow each of them. In making each set of decisions he will apply the ordinary principle of substitution as fully as his skill and enlightenment permit. He will grow crops in such proportions that each one will yield the same net marginal return, and will apply his capital and labour in such proportions that the marginal unit of each shall give the same return.[1] Even on the assumption that these adjustments have been made properly in accordance with the principles of substitution, the phenomenon of diminishing returns, in its primary and proper sense, will still appear owing to the peculiar chemical and mechanical characteristics of the soil.

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[1] Spillman and Lang, *The Law of Diminishing Returns*, p. iii.

[2] Patton, *op. cit.*, pp. 47–9.

[3] Frecheville, *op. cit.*, pp. 90–1.

[4] Marshall, *Principles*, p. 153. Marshall adds : " unless there be meanwhile an increase in the skill of the individual cultivator," but it is respectfully suggested that improvements in the skill of the cultivator, other than " improvements in the arts of agriculture " already provided for in Marshall's definition, relate to the economic and not to the physical law. They are in the nature of an increase in the efficiency of labour.

[5] *Principles*, p. 169.

Professor Patton has collected a vast amount of experimental matter showing that "practically all phases of farming provide evidences of diminishing marginal physical returns."[2] Every source of power used in agricultural operations, human, animal, and mechanical, exhibits diminishing returns; and similar results are reached in experiments relating to the application of fertilisers, seeds and cultivation to the soil. The same phenomenon characterises the transformation by farm animals of vegetable food into animal food. The digestive and metabolic mechanism of food animals is shown to conform to the law of diminishing physical returns. Dr. Spillman says that "animals on feed make smaller and smaller gains on a given amount of feed as they increase in weight." The existence of a universal law of diminishing physical returns is well established. Readers who wish to become acquainted with the actual experimental work on the subject are referred to Professor

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[1] Marshall, *Principles*, p. 435, and see Pigou, *Economics of Welfare*, p. 617.

[2] *Op. cit.*, pp. 24 *sq.*, and see the paper on *The Live Stock Industry and its Development*, read by Dr. J. S. Gordon at the British Association, 1928, p. 12.

Patton's *Diminishing Returns in Agriculture*; Spillman and Lang's *Law of Diminishing Returns*; Hall's *Rothamstead Experiments*, and other books on agricultural science. All that concerns us in the present study is to indicate the existence of such a law as the underlying foundation of the economic law of diminishing returns, which is the more proper subject of agricultural economic science.

The tendency of diminishing physical returns can be held in check temporarily by means of improvements in the arts of agriculture. Ricardo made an important distinction between two kinds of improvements: first, those that increase the productive power of land, and second, those that by improving machinery enable produce to be obtained with less labour.[1] It is improvements of the first class that are relevant in considering physical returns; the second type of improvement relates to economic returns. Every invention which increases the productive power of the soil by altering its mechanical or chemical composition, or which increases the efficiency of the digestive or metabolic mechanism of animals is included in this class. Such inventions are within the domain of the agricultural scientist. Improved plant and animal breeding, the discovery of new fertilisers, and the introduction of new methods of rotation are among the subjects proper for the agricultural research student. By means of such inventions the onset of diminishing physical returns may be delayed and the level of the physical maximum of production may be increased.[2] If maximum gross yield alone were the test of successful agricultural production, the attainment of this physical maximum would be the sole aim of the farmer, but, when net yield, as measured by profit, rather than gross yield becomes the test of success, a completely new element is introduced, namely, the comparative value of the results obtained and of the means employed to obtain them. The farmer's profit, as Marshall puts it, depends on "firstly the richness of the land and secondly the relative values of those things which he has to sell and of those things which he needs to buy."[1] The former determines his physical and the latter his economic return.[2]

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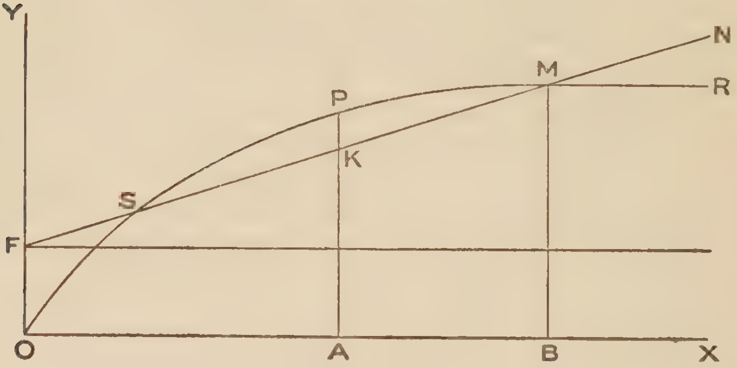
[1] Cannan, *Theories of Production and Distribution*, pp. 325 n., 328; Walker, *Political Economy*, p. 431.

[2] Patton, *op. cit.*, pp. 37–8; Dampier-Whetham, *Politics and the Land*, pp. 185–7; Nourse, *op. cit.*, pp. 187–9, 311.

The transition from the law of physical to that of economic returns is simply accomplished. If the increments of outlay are multiplied by the cost of a unit of outlay and the increments of yield by the price of a unit of yield the point of economic maximum production can be easily ascertained.[3]

Diagram I.



If OF on the above diagram represents the cost per unit of output of overhead or standing charges, and the line FKMN represents the cost of successive equal increments of outlay incurred in respect of obtaining a particular crop, then the total prime and supplementary cost of each unit produced is represented by the distance between FKMN and OX. If the curve OPMR represents the yields of the crop obtained corresponding to each increment of outlay, then the profit obtained for any unit of outlay is represented by the distance between OPMR and FKMN. That distance is greatest at P. If a line be drawn from P parallel to OY meeting OX at A, then the OAth unit of outlay is that which will produce the greatest marginal profit. Every unit of outlay after that point produces a diminishing marginal profit until the point M is reached, after which further units of outlay produce negative profits, or losses. Total profits have been increasing, though at a diminishing rate, until this point is reached; after it has been passed total as well as marginal profits diminish. If a line be drawn from M parallel to OY meeting OX at B, then the OBth unit of outlay is that which will produce the greatest total profit. The point B may be said to limit or lie at the margin of profitable cultivation.

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[1] P. 631.

[2] On the different tests of successful farming from different points of view see Ashby, "Standards of Production and Net Output on Scottish Farms," in the *Scottish Journal of Agriculture*, Oct. 1923, p. 401.

[3] Patton, *op. cit.*, p. 56 ; Nourse, *op. cit.*, p. 311.

The location of these maxima will determine the degree of intensity that will repay the farmer most. As we have already said, the aim of every farmer is to obtain the greatest possible net profit, and the method by which this result can be secured is discoverable by ascertaining the points at which these maxima occur. A certain amount of difference of opinion has arisen between economists regarding which maximum should be selected. Whereas English writers have generally suggested that cultivation should be intensified until the point of maximum total profits, B, American writers have usually favoured the point of maximum marginal profits, A, as the most desirable limit of intensity. This difference of opinion is the result of the different circumstances in old and in new countries. In the former the supply of land is limited, whereas that of labour is comparatively plentiful, while in the latter the supply of land is plentiful, whereas that of labour is comparatively limited. Naturally, the desire of the cultivator must be to maximise his profit per unit of that factor of production the supply of which is most difficult and consequently most expensive to increase. Hence in old countries such as England maximum profit per acre is regarded as the aim of the farmer, while in new countries maximum profit per man is preferred.

It is perfectly clear that, if maximum profit per acre is the aim, the point of optimum intensity is B. Patton says: "At this point the curve of profits must reach its highest point. Any smaller amount of input would produce a smaller amount of profit because certain profitable inputs would be missed. Any larger amount of input would likewise produce a smaller amount of profit, but the reason in this instance is that certain unprofitable inputs would be included, and would thus cut down the total profits."[1] It is equally obvious that if maximum profit per unit of labour or other outlay is the aim the point of optimum intensity is A. The proportion of profit to outlay is measured by the ratio between the areas SPK and OFKA, and this ratio increases until the point P is reached, after which it diminishes. The choice between these alternative views will determine the intensity of cultivation. Because P must always be to the left of M, the type of cultivation required to produce maximum profit per unit of outlay will always be less intense than that required to produce maximum profit per acre.

Which of these two views is the correct one depends upon the nature of the limiting factor of production, that is to say, of the factor the increase of the supply of which is relatively most difficult. Dr. Spillman says: "The farmer's object as a business man is to obtain the greatest possible returns from the year's operations. In any case his income will be limited by some factor. . . . It is obvious that the greatest profit from the business as a whole involves the greatest profit per unit of the limiting factor. Thus, if land is the limiting factor, the aim should be to make the largest possible profit per acre. If labour limits the size of business, then the aim should be to make the greatest possible profit per unit of labour. Similarly, if the limiting factor is materials, then the aim should be the greatest profit per unit of materials."[1] The difference of emphasis in old and in new countries respectively, appears in the different phraseology employed by English and American writers. English writers almost invariably refer to the "intensity of cultivation," thereby clearly indicating that they regard the area to be cultivated as fixed, at least for the time being; whereas American writers prefer to speak about the "proportion of the factors of production," implying that no one factor is necessarily in shorter supply than the others. It is impossible for an English student to read any American book on the subject without being struck by the difference between the American view-point and his own. Warren, for example, remarks that "whereas American farmers may waste land, European farmers certainly waste labour,"[2] and Carver explains that a farm may be organised round a mule, a tractor, or, lastly, a plot of land.[3] Many American writers argue that it is more important that profits should be maximised per unit of labour or of capital than per unit of land.[4] Marshall explains that, for American farmers, "the problem is generally to obtain a produce large in proportion to the labour spent on it though small in proportion to the abundant land at their disposal."[5] These apparent differences of opinion are reconciled if it is remembered that every unit of outlay by the farmer may be reduced to terms of a capital investment, and that every unit of net produce may be reduced to terms of a return on that investment. Thus money invested in improvements and in seeds and other raw materials, money advanced to labourers by way of wages, and the payment made for the land itself—since land is but one form of capital from the point of view of the individual cultivator—may all be regarded as capital expenditure. It is obvious that the most profitable farming is that in which the net return is maximised in relation to the amount of capital invested,[1] and that, if any one of these categories of capital expenditure is costly relative to the others, it is important that the return should be maximised in relation to each unit of it that has to be employed. Such a costly type of capital expenditure may be said to be in short supply relatively to the others, and it consequently becomes the limiting factor. In old countries it is usually land, and in new countries it is usually labour that occupies this position. If all the factors of production could be obtained with equal facility, the managerial capacity of the farmer would become the limiting factor. This, however, relates to the size of the farm rather than to its intensity of cultivation.[2]

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[1] *Op. cit.,* p. 57.

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[1] Spillman and Lang, *op. cit.*, pp. 42–3, and see Gray, *op. cit.*, p. 148.

[2] *Farm Management*, p. 144.

[3] *Elements of Rural Economics*, pp. 157–8.

[4] Taylor, *op. cit.*, p. 156; Gray, *op. cit.*, p. 152.

[5] *Principles*, p. 647, and see pp. 150, 160.

Practical farmers as well as agricultural theorists acknowledge this distinction. Cultivation is generally more intense in old than in new countries. The average yield of wheat in Canada is 11·4 bushels per acre as compared with 32 bushels in England, though the output per man is greater in Canada,[3] and a similar contrast exists between farming in England and the United States.[4] With the progress of civilisation, however, new countries are gradually tending to become old. Even the United States is beginning to approximate to the condition of an old country where the supply of land is more difficult to increase than that of labour.[5] There is no absolute standard of optimum intensity for all countries at all times; everything depends upon the nature of the limiting factor. Each country is "in the grip of its own national formula," and as a country progresses the

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[1] Ashby, "Standards of Production and Net Output on Scottish Farms," in *Scottish Journal of Agriculture*, October 1923, p. 387.

[2] Carver, *Elements of Rural Economics*, p. 165.

[3] Dampier-Whetham, *Politics and the Land*, p. 39.

[4] Sims, *Elements of Rural Sociology*, p. 170; *Economic Essays in Honour of J. B. Clark*, p. 43.

[5] The question of the future supply of land in the United States is discussed in Ely and Moorhouse, *op. cit.*, pp. 63–5; *Report of Business Men's Commission on American Agriculture*, pp. 191–2; Nourse, *op. cit.*, p. 389; Taylor, *op. cit.*, pp. 107–9; Gray, *op. cit.*, p. 238; Sims, *op. cit.*, p. 612.

"national formula" will tend to change.[1] The general tendency is towards the emergence of land as the universal limiting factor.

The reason why land tends to become the most general limiting factor is that the supply of land in an old country is limited, and that most countries are approaching the condition of being old countries. It is quite true that even in an old country land is but one form of capital from the point of view of the individual farmer, but it is equally true that land does not share the reflex influences which tend to make the supply of other forms of capital adjust itself to changes in conditions of demand. Professor Edgeworth puts this neatly when he says that "the supply curve of land may be represented by a perpendicular line."[2] "The stock of land in an old country," Marshall explains, "at any time is the stock for all time; and when a cultivator decides to take in a little more land to his business he decides in effect to take it away from somebody else's business."[3] In other words, he increases the value of what remains for other cultivators, who can therefore obtain it only at an increased price.[4] In new countries "where there is an abundance of rich land not yet brought under cultivation" this fixedness of the total stock of land is "not operative," in which case some other factor may be the limiting one.[5] Even in old countries, a temporary contraction of the supply of some other factor may promote it to the position of the limiting factor for the time being; thus in England during the War the military demands on the man power of the nation increased the urgency of utilising every agricultural labourer's services to their very utmost capacity.[6]

Let us attempt to reach a conclusion of this discussion. While it is true that "there is no absolute standard of good cultivation,"[1] it is equally true that maximum profit per acre of land cultivated is the most generally accepted standard to-day. In other words, the farmer aims at maximising his output in relation to that part of his input the supply of which is relatively difficult and expensive to increase. As Patton well puts it: "The farmer's interest is to get the greatest aggregate profit for himself, and, assuming for the time being that he has a fixed area of land to deal with, this is equivalent to getting the greatest profit per acre."[2] It is this fact that land is always tending to become the limiting factor of production that distinguishes agriculture from every other industry, and that makes it peculiarly subject to the law of diminishing returns, which, as was explained above, arises from the very nature of the soil.[3]

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[1] This phrase is taken from a memorandum entitled *The Relation of Labour Costs to Total Costs in Agricultural Production*, C.E.I. 27.

[2] *Papers*, i. 34, and see iii. p. 68.

[3] *Principles*, p. 536.

[4] *Ibid.*, p. 636.

[5] *Ibid.*, pp. 170–1.

[6] Ernle, *English Farming Past and Present*, p. 414 I.

The location of the point of optimum intensity will vary with every change in the relative value of every unit of outlays and of yields.[4] The result of an increase in the costs of units of outlay is represented in Diagram II by raising the line FKMN and that of a decrease in the value of the product by lowering the line OPMR. In either case the new points of maximum marginal profits P′ and of maximum total profits M′ will lie to the left of P and M respectively.

The result, on the other hand, of a decrease in the cost of units of outlay is represented in Diagram III by lowering the line FKMN, and that of an increase in the value of the product by raising the curve OPMR. In either case the new points of maximum marginal profits P″ and of maximum total profits M″ will lie to the right of P and M respectively.

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[1] Marshall, *Principles*, p. 163.

[2] *Op. cit.*, p. 59.

[3] The subject-matter of this section is discussed admirably in Marshall's *Principles*, Book IV, chap. iii, and in Carver's *Principles of Rural Economics*, *Elements of Rural Economics* and *Distribution of Wealth*, pp. 72–7; see also Edgeworth, *Papers*, i. 97–8, and Taylor, *op. cit.*, p. 96.

[4] Dampier-Whetham, *Politics and the Land*, p. 36; Taylor, *op. cit.*, p. 150. Gray, *op. cit.*, p. 246; Wyllie in *Journal of Highland Society*, 1927, p. 5, and in *Scottish Journal of Agriculture*, i. 250; Frecheville, in *Journal of Royal Agricultural Society*, vol. 87, pp. 96–102. This is diagrammatically shown in Marshall's *Principles*, p. 158.

Thus every increase in costs or decrease in the value of agricultural produce tends to restrict the margin of profitable cultivation, and to diminish the amount of the farmer's profit, and every decrease in costs or increase in the value of produce tends to push the margin of cultivation further and to increase the farmer's profit. It follows from this that every farmer must be vitally interested in any influence that can alter the relative level of his costs and his prices. How far

Diagram II

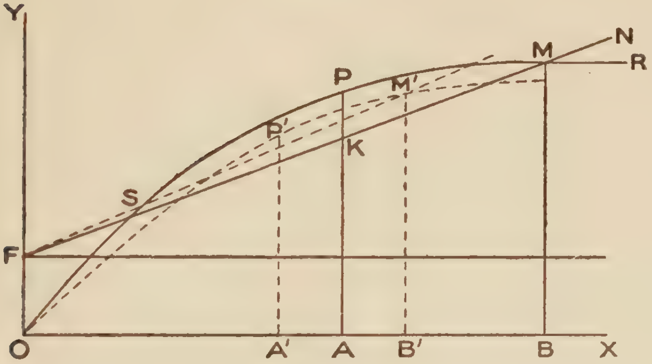
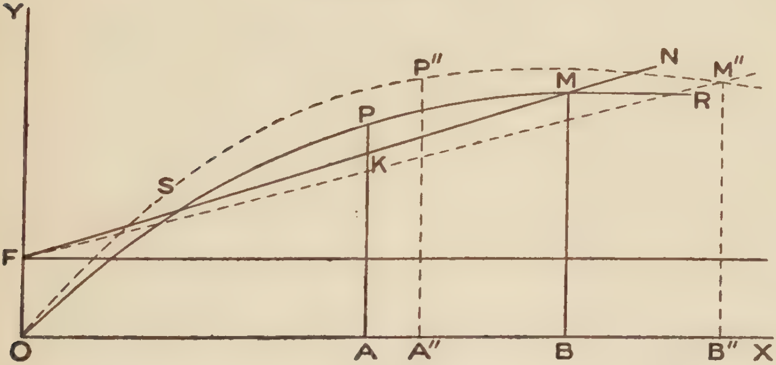


Diagram III



these levels can be altered by independent action on the part of individual farmers will therefore be the next subject to engage our attention; the extent to which they can be altered by public or State action will be discussed in the next chapter.

The increase of the sale price is, practically speaking, outside the farmer's control. In the next chapter we shall discuss how far State action by means of tariffs may have the effect of raising the price of agricultural produce, and shall indicate that the same result may be attained by the growth of demand consequent upon the development of a large industrial population, but in the present chapter we are concerned solely with action which can be taken by the producers themselves. It has sometimes been suggested that producing articles of a higher quality is equivalent to raising the price at which the farmer's produce is sold, but in fact it would appear that a change of this kind really amounts to the substitution of one article for another.[1] Apart from substitutions of this kind it is difficult to say in what way the farmer can increase his price unless by restricting his output. The restriction of output, however, involves the existence of monopolistic or semi-monopolistic conditions of production, and it is one of the characteristic features of agriculture that it does not lend itself to the development of such conditions. "Farming is a highly competitive industry. Since it is made up of thousands of different industrial units each producing the same commodity there is little chance for monopoly in any form to develop. Moreover the occupation is open to him who cares to enter it. People with comparatively little capital can engage in it. Consequently, if the returns to the farmers as a class increase to a considerable extent, it is easily possible for the number of farmers to multiply rapidly."[2] In discussing marketing we shall touch upon the question of how far production may be partially controlled; but, whatever possibilities exist in this direction, monopolistic production in agriculture is always unattainable. Consequently, the possibilities of raising prices apart from State action are not worth considering, and the farmer must look for an increase of his profits in the direction of lowering his costs of production.

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[1] See *Economic Journal*, March 1928, p. 18 n.

[2] Gray, *op. cit.*, p. 29, and see Crompton, *The Tariff*, p. 69.

Section 4. *The Costs of Production in Agriculture*

Sub-section 1. *Costs and Costing in Agriculture*

In considering the possibilities of reducing costs of production we shall consider separately economies in growing and in marketing farm produce. As has already been explained, there is no fundamental difference between the two operations, both of which are parts of the process of production. It is convenient, however, to consider them separately in connection with the possibility of adopting more economical methods, because the limits of introducing such methods are narrower in one case than the other. Mr. Dampier-Whetham divides improvements in agriculture into three classes: those relating to the science, those relating to the craft, and those relating to the business. Improvements of the first class may delay the operation of the law of diminishing returns; improvements of the second class may increase the profitableness of farming by lowering the cost of production; while improvements of the third class may increase the farmer's profits by reason of more efficient marketing. Discussion of the first class of improvements belongs to the domain of agricultural science; it is with the second and third classes that the agricultural economist is concerned.[1]

The introduction of such improvements takes place more slowly in agriculture than in other industries. Knowledge of improved methods takes a long time to reach the remote country dweller; the number of people who have the opportunity of making a step forward is small; enterprising sons of farmers drift towards the towns, while those who remain on the land become conservative and timid; improvements that work well on one farm are not applicable to another; costing is difficult; and the want of ability on the part of one undertaker is not compensated by great ability on the part of others, as it is in manufacture. The laws of competition work more slowly in agriculture than in other industries; the producer who adopts improved methods is not so sure as the producer in other industries that his less efficient rivals will be driven out of the market; and the widespread adoption of improved methods may actually injure the industry as a whole if it results in a greatly increased production for which no demand is available. The external economies which are realised in industry from localisation are impossible of attainment on the land, and specialisation is only possible to a limited extent owing to the seasonal nature of the operations on the farm.[1] Moreover, the size and the internal arrangements of the unit of production are generally determined by non-economic considerations. The size and layout of the farm is frequently determined by the laws relating to inheritance and land settlement and by the density of population rather than by influences bearing on its most economical productive capacity.[2] The supply of the factors of production other than the land itself is often determined by similar economically irrelevant causes.[3] For all these reasons the attainment of the maximum degree of efficiency is rendered exceedingly difficult.

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[1] *Politics and the Land*, p. 184.

At the very foundation of all attempts at improvement lies an accurate knowledge of the existing level of costs. Unless the exact present condition of the industry is known, efforts to reform it must necessarily be based on insufficient information. Hence arises the vital importance of agricultural costing, which, however, presents peculiar difficulties. The confusion between prime and supplementary costs, the lag in production, the allocation of expenditure between capital and revenue account, the differences between farmers and farms and the practical clerical work involved make costing more difficult and less reliable than in other industries.[1] All these difficulties are most acute on small farms where much of the produce is never brought to market.[2] The fact that costs vary less rapidly than the prices of the finished product limits the field of possible economies and diminishes the practical utility of detailed investigation into matters where no economy may be obtainable even at the expense of much labour in accounting.[3] Thus the difficulties in making progress are increased by statistical difficulties in exploring the ground for and in recording the result of experiments in improved methods.

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[1] Marshall, *Principles*, pp. 649–51; *Report of Business Men's Commission on American Agriculture*, pp. 121, 148; Sims, *op. cit.*, p. 468.

[2] Ely and Moorhouse, *op. cit.*, pp. 307–8; Warren, *op. cit.*, p. 365; Hawtrey, *The Economic Problem*, pp. 233–4.

[3] Gray, *op. cit.*, p. 189; Nourse, *op. cit.*, p. 312.

These difficulties should not discourage attempts at improving farm costings, which are an indispensable condition of increased efficiency. The subject is so important that it is nowadays generally undertaken by public authorities, and it will therefore arise for discussion in the following chapter, which is concerned with public policy in relation to agriculture. But the individual farmer can do much to help in any public costings scheme by adopting a good system of bookkeeping which will provide material for the costings investigators. In the case of one of the methods adopted in such investigations, namely, cost accounting as distinguished from the survey, the co-operation of farmers is necessary for the success of the scheme of research.[4]

The reduction of costs of production is essentially the same thing as the attainment of greater efficiency, since efficiency is simply the relation between effort and result. Everything, therefore, that the farmer does to increase the efficiency of his production amounts to a reduction in his costs, and when efficiency is maximised cost is minimised. We shall discuss the various factors on which efficiency in agriculture depends, and shall indicate to what extent they are under the control of the individual farmer. Many of them, we shall see, are only partially within his control, others quite outside it. Changes in these factors, designed to increase productive efficiency, must come from some outside agency and will be discussed in the next chapter. In the present chapter we are concerned solely with increases in efficiency which can be realised by the free action of individual or organised farmers.

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[1] Orwin, *The Determination of Farming Costs* ; King, *Cost Accounting in Agriculture* ; Taylor, *op. cit.*, chap. 32 ; Marshall, *Principles*, p. 345 n.

[2] Marshall, p. 650 ; C.E.I. 36, pp. 511–13.

[3] Engberg, *op. cit.*, pp. 93, 135 ; King, *op. cit.*, p. 15.

[4] See Nourse, *op. cit.*, pp. 374–7.

We further assume that profit is the mainspring of enterprise. If there can be shown to be a disharmony between the interest of the agricultural producer and that of any other class of the community or of the nation as a whole, we shall assume that the interests of the producer must prevail. Any deflection of the action of any group of producers from their line of maximum advantage in the interests of other classes is a matter of State interference which will be discussed later. Here we are concerned simply with farmers regarded as business men seeking the greatest profit they can gain from their labour and enterprise.

The principal things upon which the efficiency of any industry depends are, first, the size and internal organisation of the unit of production, second, the price paid for the various factors of production, and third, the proportion in which these factors are combined. The consideration of these three aspects of production in respect of agriculture involves a discussion, first, of the size and layout of farms, second, of the price paid for land, labour and capital and the other factors of production, and third, of the proportion in which these factors are combined. The last of these matters has already been discussed in connection with the law of diminishing returns, where it was indicated that the optimum combination of the factors of production is that which gives the maximum return per unit of the limiting factor, which is, in old countries, land. The proportion in which the other factors should be combined is dictated by the ordinary law of substitution.

Sub-section 2. *The Unit of Production*

(*a*) *The Size of the Farm.*—When we speak of large and small farms we usually refer to their area. The mere area, however, is in itself no measure of the relative importance of two farms. The situation in respect of markets, the fertility of the soil, the intensity of cultivation or the nature of the crop may form a better index of the relative importance of different farms. Moreover, area is itself a relative term; the same area of land might form a very large market garden and a very small cattle ranch. Area is, however, a measurement which is common to all farms of whatever description, and is therefore the most satisfactory unit for comparing the size of farms.[1]

It has already been indicated that the area of many farms is the result of historical causes which have no economic bearing. The area of many farms in the United States is determined by the Land Settlement Acts; in France and Belgium the inheritance laws have produced innumerable small holdings; and in Ireland the size of many farms has been stereotyped for all time by the conditions prevailing when the Land Purchase Acts were being put into operation. In England the influence of non-economic causes has been less strong, and Sir Henry Rew is of the opinion that "the farms were generally arranged on the economic principle of securing the economic maximum production or profit under the existing conditions in their particular locality," and that "notwithstanding all the improvement in agricultural practice and the teaching of agricultural science, they remain as a rule to-day the most suitable for their situation."[1] It is clear that in old countries the possibility of the attainment of the size of farm calculated to give the maximum efficiency in production is frequently limited in practice, and that practical discussion must centre on adopting the best type of farming for farms of a definite size rather than in inquiring what size of farm is most desirable. Knowledge of the most desirable size of farm is, of course, of great value in discussing the circumstances of new countries where all the land has not already been enclosed.

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[1] Taylor, *op. cit.*, p. 170; Gray, *op. cit.*, pp. 100–2. *Agricultural Output of England and Wales*, 1925, Cmd. 2815, p. 80. Professor Carver defines large scale farming as "farming when there is land enough, capital enough and men enough employed to make it economical for the manager to give his whole time to the work of supervision and management, all the manual work being done by employees working under his direction," *Principles of Rural Economics*, p. 240.

The principal advantages enjoyed by the large farm are identical with those possessed by large scale production in any other industry, namely, economy of materials, economy of skill, economy of machinery and economy in buying and selling. Division of labour becomes possible, machinery can be utilised to its fullest advantage, and a certain degree of specialised management can be attained. The introduction of improved processes is frequently outside the capacity of the small farmer, whose turnover would not justify him in a considerable outlay of capital. Overhead charges are kept down when the scale of production is large. In a word "man's part in agriculture conforms with the law of increasing returns."[2]

The internal organisation of any industrial unit frequently depends upon the size of the unit itself. A large farm may lend itself to a more desirable arrangement than a small. For example, the fields in a small farm must necessarily be very small and therefore expensive to till, while they cannot be consolidated owing to the necessities of the rotation.[1] The advantages of large farms are also great when the labour is of a very low type, such as slave labour, or where working in gangs under foremen is the custom, as, for example, in the sugar-beet fields in the United States.[2]

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[1] *Primer of Agricultural Economics*, p. 51.

[2] Marshall, *Principles*, pp. 653–4; Taylor, *op. cit.*, p. 180; Rew, *op. cit.*, p. 58; Carver, *Distribution of Wealth*, pp. 64–5; *Principles of Rural Economics*, pp. 242–4.

On the other hand, large farms possess certain disadvantages which are not shared by large scale units of production in manufacturing industry. The distance of many of the operations from the centre of the farm may not only entail much loss of time in going to and from work, but may also render impossible close supervision of the workmen by the farmer. Moreover, the absence of personal contact between employer and man may cause a certain lack of enterprise and interest. Rapid shifts from one job to another in response to weather vagaries are difficult when labour is widely scattered. The general experience of Bonanza farming in the United States and of factory farming in England suggests that there is an upper as well as a lower limit to the scale on which farming can be profitably conducted. As, however, the upper limit depends largely on the managerial capacity of the farmer, it is probable that it may tend to move to a higher level in the future with the spread of improved education among the farming classes.[3]

There is no doubt, however, that farming, like every other industry, tends to obey the law of increasing returns as far as man's part is concerned. The lack of personal supervision and contact by the farmer is the principal reason brought forward in favour of farms of comparatively small size. Once the farm has passed beyond the size where reasonable supervision by the farmer is possible, and has come under the direction of specialised managers, it would seem that the efficiency should increase with the size. Marshall says: "If it be assumed that the farmer is not to work habitually with his men and to encourage them by his presence, it seems best for the economy of production that farms should be as large as is practicable under the existing conditions of land tenure."[1] Statistics are available to prove that the net produce per acre tends to increase with the size of the farm, whereas the gross produce tends to diminish.[2] The following table from a paper by G. F. Warren, reprinted in Carver's *Select Readings*,[3] shows the relation between the size of farms and the efficient utilisation of farm labour on 670 farms situated in New York.

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[1] Warren, *op. cit.*, p. 262.

[2] Gray, *op. cit.*, p. 114; Taussig, *International Trade*, p. 84.

[3] Taylor, *op. cit.*, p. 173; Rew, *op. cit.*, p. 59; Warren, *op. cit.*, p. 266; Nourse, *op. cit.*, pp. 344–5, 352; Venn, *Agricultural Economics*, p. 90; Taussig, *Principles*, i. 56; Carver, *Select Readings*, p. 596; *Report of Business Men's Commission on American Agriculture*, p. 142. Professor Carver classifies the disadvantages of large scale farming into (1) geometrical, (2) seasonal, and (3) temperamental. *Principles of Rural Economics*, p. 244. A table printed in Patton's *Diminishing Returns in Agriculture*, p. 65, shows very clearly that returns begin to fall off after a certain optimum area has been passed.

Size in acres.	Under 31.	31–50.	51–100.	101–150.	151–200.	Over 200.
Acres of crops per man.	13	21	30	41	45	57
Animal units (except horses) per man.	3	7	10	12	13	15

Since we are confined in the present chapter to considering agriculture from the point of view of the farmer's profit, net product is more important than gross product because it is more profitable. We may therefore conclude that the profitableness of farming tends to increase with the size of the farm. We must add, however, that many of the advantages of large scale production can be secured by comparatively small farmers by means of co-operative organisation, whereas the advantages of small scale production are seldom if ever attainable by the large farmer. The attainment of the benefits of large scale farming by means of co-operative organisation on the part of small farmers must be carefully distinguished from the co-operative organisation of large farms by means of joint leasing by numbers of labourers such as is to be found in Italy. Farms organised in the latter manner are large farms, and it is only in respect of the distribution of the farm income that their co-operative ownership is relevant.[1]

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[1] *Principles*, p. 653.

[2] Rew, *op. cit.*, pp. 59–62; Carver, *Select Readings*, p. 587; Irish Free State *Agricultural Statistics*, 1847–1926, pp. viii, lv; *Agricultural Output of England and Wales*, Cmd. 2815, pp. 105, 113. This is not a universal rule; for example, yields per acre as well as per man vary directly with the size of farms in Roumania—Venn, *op. cit.*, p. 69.

[3] P. 588.

There is generally in practice a fairly well defined maximum and minimum limit between which the most economical unit of production lies. The upper limit is usually determined by the managerial capacity of the farmer, by the power of supervision over a large area, and by the practical difficulty of getting large supplies of capital. It might be said that, whereas land is usually the limiting factor in regard to intensity of cultivation, the managerial capacity of the farmer is the limiting factor in regard to size.[2] The lower limit is set by the necessity of full use being made of essential and indivisible factors of production so that these factors will not be wasted through idleness. This principle may be called the unit principle. To be of proper size a farm must make demand for one, two or more units of organisation, but should not fall halfway between. Any farm that does not provide full employment for one unit is uneconomically small.[3]

What area is the least that will afford such employment depends on numerous local conditions, but American writers agree that the farm should never be so small as not to provide continuous work for two men. In other words, the unit of organisation as far as labour is concerned consists of two men and not of one. There are frequent occasions when two men working together can do much more than two working separately. If the labour unit is the farmer and his family, the farm should be large enough to give them continuous employment.[1]

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[1] See the *Technical Survey of Agricultural Questions* published by the International Labour Office, Geneva, 1921, pp. 161–73.

[2] Gray, *op. cit.*, pp. 114–16.

[3] *Ibid.*, p. 107; Taylor, *op. cit.*, p. 176.

Again, the farm should be large enough to make as full use as possible of the machinery that makes for efficiency.[2] The following table from a paper by G. F. Warren, reprinted in Carver's *Select Readings*,[3] shows the relation between the size of the farm and the efficient utilisation of machinery on 1248 farms situated in New York :

Size in acres.	Under 31.	30–50.	51–100.	101–150.	151–200.	Over 200.
Value of machinery per acre of crops $ . .	9·93	7·29	9·10	6·76	6·21	5·45

Similar results are shown by the figures relating to the Irish Free State and to Scotland.[4]

When the services of any factor are required in different quantities at different seasons, the supply of each factor must be great enough to meet the " peak " demand for its services. In a word, the minimum size of farms is determined by the " peak " demand for the most essential indivisible unit of production. If there is more than one essential indivisible unit, the more expensive is the one the full utilisation of which is most relevant, for the failure to use fully the less expensive unit is not so serious as the failure fully to utilise the more expensive.[5]

The optimum sized farm lies somewhere between these upper and lower limits. It is quite impossible to lay down any general rule as to what size is best. The optimum size

[1] Gray, *op. cit.*, p. 108 ; Taylor, *op. cit.*, p. 174 ; Warren, *op. cit.*, p. 289 ; Nourse, *op. cit.*, p. 338.

[2] Gray, *op. cit.*, p. 110 ; Nourse, *op. cit.*, p. 349.

[3] P. 591.

[4] Irish Free State *Agricultural Statistics*, 1847–1926, p. lv ; *The Agricultural Output of Scotland*, 1925, Cmd. 3191, p. 61.

[5] Gray, *op. cit.*, pp. 111–12 ; Ely and Moorhouse, *op. cit.*, p. 111.

is different for different types of farming; in the United States cotton farms are generally smaller than wheat farms; and large farms are more economical for cereal cultivation while small farms give better results in mixed farming and dairying.[1] Levy, whose book on *Large and Small Holdings* deals very thoroughly with this question, comes to the conclusion that "the large holding is absolutely superior in regard to corn growing and mixed husbandry and in the breeding of pedigree stock; in potato growing it has the advantage, while in stock feeding it is on an equality with the small holding. . . . Small holdings excel in fruit and vegetable growing, in poultry breeding and in stock farming generally with the exceptions mentioned above." Levy concludes that large holdings are preferable where much capital is required, and small holdings where intensity of labour is essential. The cost of building is, however, always a drawback to the small holder.[2] The optimum size may vary, moreover, with the managerial capacity of the farmer, with topographical and climatic conditions, with the supply of labour available and with the degree of diversification of the farming pursued. It may be affected by the condition of land tenure. If, for example, land is held in metayage the optimum area may be smaller than if it is held at a money rent because the opportunities of supervision of the metayer landowner are greater if the area is small. Finally, it may be affected by the capital and credit facilities that are available. Small farms require more capital per acre than large, and therefore the optimum size may be greater when interest rates are high than when they are low.[3] So many variable factors have to be taken into account that it is impossible to lay down any rule more general than that stated by Taylor: "While there is no proper size for farms in general, there is always a proper size of farm for a given man at a given stage of his own development on a given type of soil in a given line of production with given labour and market conditions." [1]

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[1] Taylor, *op. cit.*, pp. 171, 181; Venn, *op. cit.*, pp. 88–93.

[2] *Large and Small Holdings*, pp. 181–4, and see Thomas, *The Economics of Small Holdings*, p. 5.

[3] *Agricultural Output of England and Wales*, 1925, Cmd. 2815, p. 116.

Nevertheless, in spite of great varieties, a modal size of farm emerges for different countries. Thus 97 per cent. of the farms in Denmark are less than 150 acres in extent; in Ireland the modal farm lies between 5 and 15 acres. In other countries, for example Canada and Australia, larger areas are typical; 45 per cent. of the farms in the United States are between 50 and 175 acres. Taking the world as a whole, the family farm emerges as the modal unit.[2] In other words, the typical productive unit in agriculture is relatively small compared with that in manufacturing industry, and this contrast is tending to become greater at the present day. While the whole movement of industry is towards larger production establishments, the movement in agriculture is in the direction of the multiplication of small farms. It must be remembered, however, that this movement is the result of political and social rather than of economic considerations.[3]

It is not always desirable that the modal should become the universal type. A mixture of small and large farms may prove beneficial to both. Cattle raised on the small farm may, for example, be fattened on larger tracts of rich grazing land. Thus the agriculture of any country must be looked on as a joint operation of all the individual farmers. Moreover, the existence of small farms in a locality may increase the efficiency of the labour employed on large farms by stimulating hard work on the part of those labourers who have the ambition of buying farms for themselves.[4] From this conclusion two considerations arise: first, that the optimum size of any one farm may vary with the size of other farms in the neighbourhood, and, second, that any violent interference by the State in breaking up large holdings may have unforeseen repercussions on small farmers.[1]

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[1] *Op. cit.*, p. 171. In England the best size for family farms is probably about 75 to 100 acres, and for farms worked with hired labour about 350 acres. Dampier-Whetham, *Politics and the Land*, p. 44. The relative merits of large and small holdings in France are discussed in Jouzier, *op. cit.*, pp. 383–6, and in Auge-Laribé, *L'Evolution de la France Agricole*, pp. 90–9.

[2] Taylor, *op. cit.*, pp. 171–3.

[3] *Agricultural Tribunal of Investigation*, Cmd. 2145, p. 125.

[4] *Ibid.*, p. 134.

(*b*) *The Layout of the Farm.*—The internal arrangement of the farm is an important factor in its efficiency. Large fields are more economical than small; centrally situated farm buildings avoid wasteful journeys by horses and men; and much land may be saved for cultivation by improved methods of fencing. The detailed discussion of such matters as these belongs to farm management rather than to agricultural economics. It is sufficient to indicate their importance, and to state that, like the size of farms, the layout is largely the result of non-economic considerations. Warren says: "The present arrangement of practically all farms is the result of accident. The older the country the worse the farm layout, because, as new obstacles are introduced, the fields become smaller and more irregular. As new buildings are built and old ones patched up, numerous unrelated buildings collect."[2]

(*c*) *The Degree of Specialisation.*—Another factor of great importance in determining the efficiency of production in agriculture is the degree of specialisation of output. There are innumerable degrees of specialisation possible, ranging from concentration on one single product to the most complete diversity.[3] Confusion is frequently caused in this connection by the inaccurate use of terms. A dairy farm may be highly specialised if the only product is milk or butter, but it will be equally correctly described as a dairy farm if pure bred cattle are also raised on it for sale. Again, a "fruit farm" may be quite diversified if many kinds of fruit are grown on it, or a grain farm if it produces many different cereals. In order to avoid confusion arising from this cause Gray divides farms into four classes: specialised, semi-specialised, semi-diversified and diversified[1]; and Warren suggests that no farm can claim to be called specialised unless forty per cent. of its income is derived from its principal product.[2]

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[1] *Irish Free State Commission on Agriculture*, 1924, p. 34; *Report of Agricultural Sub-Committee of Reconstruction Committee*, p. 61.

[2] *Op. cit.*, p. 365; Ely and Moorhouse, *op. cit.*, pp. 307–8.

[3] A method of measuring diversity by a diversity index number is explained by Gray, *op. cit.*, p. 63.

The advantage of specialisation is that it enables the benefits of large scale production to be fully realised. Labour will become more skilled, expensive machinery will be remunerative and management will be more enlightened if only a single article is being produced. In other words, the industry will enjoy the internal economies of production which cause the law of increasing returns to come into operation. It is usually, therefore, on large farms, where the internal economies are most capable of realisation in other respects, that specialised production is principally adopted.[3]

These benefits are gained, however, at the expense of many disadvantages. The fertility of the soil may suffer through the absence of the proper rotation, which is possible only if there is a certain degree of diversity of production. The absence of live stock from the land is particularly injurious from this point of view. Pests tend to multiply and become more dangerous when the same plant is grown continuously for several years. Moreover, reliance on a single product greatly increases the evil effects of fluctuations in yields and prices. If several articles are produced, compensating movements may lessen the force of such fluctuations. The proper seasonal distribution of human and horse labour may be unattainable if there are not several different operations to be performed at the different seasons throughout the year, and the specialised farm may thus fail to conform with the unit principle already explained.[4] Waste may occur through inability to dispose profitably of bye-products of the main crop; straw and spoiled grain may be valueless in the absence of live stock. Finally, the income of the specialised farmer is not spread evenly over the year. This last disadvantage is, however, capable of being removed by means of co-operative marketing.[1]

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[1] *Op. cit.*, p. 123.

[2] *Op. cit.*, p. 105.

[3] Boyle, *Agricultural Economics*, p. 43.

[4] Warren, *op. cit.*, pp. 109 *sq.*, gives excellent tables showing the seasonal distribution of labour for various crops.

The disadvantages of specialisation generally outweigh the advantages. Warren concludes that "the vast majority of farmers find it pays better to have several important products." On the other hand, "while it is better to have two to four important products than one, it is usually not desirable to have a lot of little things."[2] The different products chosen should be as far as possible "non-competing," that is to say, they should be crops that do not consume the same properties of the soil and that do not consume the same portion of the farmer's time. Unless the crops are non-competing in this sense the fullest advantage of the diversification will not be realised.[3] Moreover, the products should be those which are individually most suited to the size of the farm. For example, a large farmer may find it best to vary his production between wheat and pedigree stock and a small farmer between pigs and poultry.[4] There is one exceptional case in which specialisation is to be recommended, namely, where a particular area presents unusual physical advantages for the production of a certain crop. For example, concentration on cotton is found to pay in the so-called Cotton Belt in the United States. In cases of this kind, the produce of the locally predominant crop may enjoy in addition to the internal economies of production many of the external economies which arise on the localisation of an industry.[5]

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[1] Gray, *op. cit.*, pp. 124–7.

[2] *Op. cit.*, pp. 107, 142.

[3] Carver, *Principles of Rural Economics*, pp. 237–8. Taylor divides crops into competing, supplementary and complementary, *op. cit.*, pp. 37–9.

[4] Levy, *op. cit.*, p. 182.

[5] Gray, *op. cit.*, p. 127. The advantages of diversification are summarised in Carver's *Select Readings*, pp. 616–9, and his *Principles of Rural Economics*, pp. 236–8; Jouzier, *op. cit.*, pp. 506–9, and *The Report of the Business Men's Commission on American Agriculture*, pp. 192–4.

Sub-section 3. The Cost of each Factor of Production

(*a*) *The Distinction between Costs and Profits.*—The cost of production in agriculture, as in every other industry, depends upon, first the size and internal organisation of the production unit, and second, the cost of the various factors of production. The first of these matters was discussed in the previous sub-section, and we must now consider how the cost of each factor of agricultural production can be reduced by action on the part of the farmer, either alone or in organisation with his fellows. In approaching this branch of the subject we are faced with an initial difficulty. We have already referred to the great difficulties of agricultural costings. Even assuming that the statistical difficulties are surmounted, further difficulties of principle arise concerning what should be included in costs and what in profits. The farmer's profit obviously consists of the value of his gross output less the costs incurred in producing it ; and the amount of his profit cannot therefore be ascertained until every element of cost is accurately estimated. But this is a matter upon which there is much disagreement arising from the fact that farming is usually a small scale industry in which the farmer himself supplies most of the labour and works with but little borrowed capital. In this case, should the remuneration of his labour and the interest earned on his own capital be reckoned as part of his costs or as part of his profits ? Strictly speaking, if commercial bookkeeping standards were observed, the cost of his own labour, of his own earnings of management, and of interest on his own capital, all reckoned at current rates, should be deducted from his gross income before true profits emerged in isolation. " The profits of farming," Professor Carver correctly says, " are what is left of the farmer's annual income after allowing himself wages for his own labour, rent for his own land, and interest for his own capital."[1]

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[1] *Principles of Rural Economics*, p. 315.

In fact, however, these niceties are not observed in agricultural bookkeeping, in which one of two methods is usually adopted. Either interest is set aside first, and the remainder is regarded as the reward of the farmer's own work, his wages, so to say ; or a sum corresponding to the wages of a full-time worker is set aside first in payment of the farmer's own work, and the remainder is regarded as the interest on his capital. Either of these methods will show whether the farmer is conducting his business profitably or not. If, by the former method, he is shown to be earning less than a fully employed agricultural labourer at current rates of wages ; or if, by the latter. he is shown to be receiving less than the normal rate of interest on his capital; then, in either case, he is farming unprofitably and would be better out of the business.[1]

Possibly the most satisfactory method of reckoning the farmer's profit in the case of small or family farms is that used in the United States and Canada, namely, the "labour income" method, which is described as follows: "The farmer is considered the principal worker on his own farm. The 'labour income' therefore is the reward coming to him. It is arrived at by deducting from total receipts, including increase in the value of stock, the amount of total expenditure during the year, including taxes, depreciation, the wages of hired labour, an estimated amount of payment for the labour of the farmer's family, and interest on capital, both fixed and working, at five per cent. The residuum of 'labour income' then represents (*a*) reward for the farmer's own manual labour, (*b*) reward or salary for his management, and (*c*) profits."[2] The advantage of this method is that the average farmer does not employ much capital, and that the value of his own labour would be difficult to estimate as an item in cost seeing that it is inextricably mixed up with the function of management.[1]

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[1] The whole of this matter is excellently discussed in a memorandum entitled *The Relation of Labour Cost to Total Costs of Production in Agriculture*, which forms part of the documentation of the International Economic Conference, C.E.I. 27. The relative proportions of paid labourers and owner operators in several European countries is given in C.E.I. 36, p. 417. English figures are to be found in *The Agricultural Output of England and Wales*, 1925, Cmd. 2815, chap. viii., and Irish Free State figures in *Agricultural Statistics*, 1847–1926, chap. v.

[2] Memorandum C.E.I. 27, referred to in last note.

The fact that the different elements of cost are difficult to observe in isolation does not disprove their separate existence. They will all continue as costs of production even though they may form no part of the expenses of production, to use a distinction of Marshall's.[2] We shall therefore assume throughout the following discussion that each element of cost can be isolated if necessary, and on this assumption shall consider how reductions can be made in each of them. Agricultural costs might be divided into many elegant classifications, but they are all included in the following rough division: costs of labour, of capital, of raw materials, of taxation and of marketing.

(*b*) *The Cost of Labour.*—Nobody would be so bold as to suggest that the cost of labour should be reduced by a reduction of agricultural wages, which are already painfully low. It is calculated that in England the level of agricultural wages is only two-thirds that of the level of correspondingly skilled workers in other industries, and a similar disparity has been shown to exist in the United States.[3] The more energetic and enterprising workers drift towards the towns, and the farm workers who remain on the land have not the benefit, generally speaking, of the protection of sheltered markets for their products or of a high degree of trade union organisation. The earnings of peasant proprietors frequently do not reach those of paid labourers, especially when account is taken of the long hours which they work.[1] The standard of living of the average European peasant proprietor is so low that this form of tenure is usually found impossible in countries where there is a large population of highly paid industrial workers.[2]

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[1] Warren, quoted in Carver, *Select Readings*, pp. 576, 578 n., 639; Boyle, *Agricultural Economics*, p. 89; Nourse, *op. cit.*, pp. 4, 797, 869. Examples of the determination of labour incomes in England are given in Orwin, *op. cit.* pp. 103–10, and see Ashby, "Standards of Production and Net Output on Scottish Farms," in *Scottish Journal of Agriculture*, vi. 387.

[2] *Principles*, p. 339.

[3] *Agricultural Tribunal of Investigation*, p. 165; Sims, *op. cit.*, pp. 474–9; Taylor, *op. cit.*, p. 577; Nicholson, *Principles of Political Economy*, iii. 156.

Reduction of earnings, therefore, either of wage labourers or of peasant proprietors, is not available or desirable as a method of lowering the labour costs of production. Since the object of the study of political economy is to increase the prosperity of all classes, a large supply of cheap labour is the thing above all others that should be considered most undesirable. The same result may, however, be attained by increasing the efficiency of labour. This is well put in the Report of the American Business Men's Commission on Agriculture: "The solution of the problems of agriculture does not lie in the direction of putting on the land those workers who will take the wage that a low yield affords, but in raising the yield to the level which high wage men demand."[3] This may be attained in three ways: first, by increasing the efficiency of the workers themselves, second, by increasing the efficiency with which their labour is directed, and third, by the introduction of labour-saving devices.

The efficiency of the worker may be increased by education, which aims at "the utilisation to the maximum, and with the maximum of output and minimum of effort, of the innate or acquired capacities of the persons employed in agriculture, so that the producer may fulfil his functions with the greatest possible advantage to himself and his fellows."[4] Mere technical education is not so important as general education, because agriculture is a pursuit where character and perseverance in the face of difficulties are of great importance. Most of the advance made in agricultural improvements in recent years has been founded not so much on technical as on general education.[1] Character is at least as essential for a successful farmer as specialised skill. The question of how the requisite degree of education can be acquired by farmers and farm labourers does not arise at this point; the intervention of the State may be necessary in this connection. All that is necessary in the present chapter is to indicate that education is the principal method of increasing the efficiency of agricultural labour and thus of reducing labour costs.

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[1] Belshaw, *Economic Journal*, March 1926, p. 38; *Agricultural Tribunal of Investigation*, pp. 34–5.

[2] Orwin and Peel, *Tenure of Agricultural Land*, p. 12; Dampier-Whetham, *Politics and the Land*, pp. 181–2.

[3] *Report*, p. 228.

[4] C.E.I. 36, p. 17.

Anything that increases the health and strength of the rural population tends to increase the efficiency of farm labour. "There is a great deal of work which requires plain muscular strength, tasks in the performance of which the strong man may move with ease whereas the weakling will wrestle without results. Two weak-muscled men are often required to do the work of one strong man. The man with ill-health who is often unable to work has little hope for success on the farm. The tasks of the farm must be done at the right time. The farmer cannot drop out for a day or a week and come back and pick up the work where he left off. There is no place for the weakling on the farm."[2] In so far as insufficient strength or bad health is the result of an unduly low standard of living they may be remedied by an increase in the wages paid, in which case higher wages, by increasing the efficiency of the worker, lower the real cost of labour.[3] Raising the standard of living as a means of increasing the efficiency of production is of particular importance in backward countries where population tends to press on the soil. In such cases an increased standard of living may be the indispensable foundation of all agricultural improvement.[4]

In so far as the standard of efficiency of rural labour is lowered by the migration of the more enterprising and energetic workers to the towns, it may be remedied by anything that helps to make country life more attractive and less monotonous. Facilities for the acquisition of small holdings by successful labourers may also stimulate workers to put forward their best efforts and may prevent them from leaving the countryside in pursuit of more ambitious employment in towns. Thus the "Better Living" side of the co-operative movement and a public policy of providing small holdings may have an economic as well as a social justification.

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[1] *Agricultural Tribunal of Investigation*, pp. 17, 89, 120.

[2] Taylor, *op. cit.*, pp. 121–3.

[3] Nourse, *op. cit.*, p. 257.

[4] *Royal Commission on Agriculture in India, Abridged Report*, p. 89.

The devices for proportioning wages to efficiency, so familiar in manufacturing industry, are not capable of wide adoption in agriculture. While the payment of a flat time rate may possibly discourage the worker from putting forth his best exertions, the substitution of other methods of remuneration is difficult. Piece rates are frequently unsuitable owing to the great variety of tasks which the farm labourer has to perform and the lack of standardised operations so common in manufacture. Moreover, there is a danger that the quality of the work will suffer at the hands of careless workmen unless they are subject to constant supervision.[1] A bonus on exceptionally careful or rapid work is frequently found advantageous.[2] Profit-sharing schemes are possible only when labour is hired by the year and when an accurate system of accounts is kept in which both parties have confidence. The division between landowner and tenant of the gross produce appears at first sight to be a variety of profit-sharing, but such an arrangement really amounts to metayage and is a form of land tenure rather than of labour remuneration.[3]

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[1] Taylor, *op. cit.*, p. 192; Gray, *op. cit.*, p. 369; Rew, *op. cit.*, pp. 95–6.

[2] Taylor, *op. cit.*, p. 192.

[3] Taylor, *op. cit.*, p. 192; Gray, *op. cit.*, pp. 369–70. On the "quality-quantity" system of payment adopted in the Californian fruit industry, see *Report of Business Men's Commission on American Agriculture*, pp. 197–8. The question of introducing profit-sharing in English farming is discussed

The most efficient labour will be costly if it be not efficiently directed, and hence arises the great importance of increasing the efficiency of farm management. Of course, the line between labour and management is much less definite in farming than in other industries because the two functions are frequently performed by the one man. It has been suggested that no true function of management emerges on farms of less than 50 acres,[1] but it must be remembered that the smallest farmer exercises management functions every time that he decides on how to dispose of his own labour and that of his family. Of course the most economical direction of labour whether one's own or that of paid workers is only one of the manifestations of good management, which is responsible for the wise conduct of the whole farm alike on the technical and the business side. The farmer, in his capacity as manager of his farm, has to decide on the size of the farm which he will operate, the amount of capital to be invested in permanent improvements, the layout of the fields and buildings, the crops to be grown, the degree of intensity of cultivation of each crop, the correct proportions of capital and labour to employ, and the best time and place in which to market his products. The function of management extends to every part of the farmer's whole operations. The term management is, however, capable of bearing a narrower sense, namely, the day-to-day supervision and direction of the labour actually employed; and it is in this sense that it is used in the present discussion.

It is impossible to overstate the importance of a suitable distribution of the labour employed. Warren says: "The labour problem is not to be solved by having more labour or cheaper labourers, but by directing labour better than the average farmer directs it . . . the one way to solve the

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in articles in the *Edinburgh Review*, January 1919, and the *Scottish Journal of Agriculture*, iii. 229 and iv. 151; see also Dampier-Whetham, *Politics and the Land*, p. 200, and *Survey of Industrial Relations*, published by Committee on Industry and Trade, 1926, p. 325.

[1] Venn, *op. cit.*, p. 63.

labour problem is to organise the farm business so well that the labour used on the farm is unusually effective; in other words, to so manage the farm work that a given amount of labour accomplishes more than on the average farm."[1] Sir Daniel Hall asserts that: "in considering the technical methods by which farming can be improved I put in the forefront the question of the efficiency of labour. It is true that there is scope for the greater utilisation of scientific discovery, but, great as are the advances that may be promised, they are all secondary to and even dependent upon the economic necessity of the more efficient utilisation of labour. One sees all too many farms where well-meaning and well-read people are trying out the results obtained by the experimental stations and making them of no avail because three men are being employed when two should be enough."[2]

While the annual variations in demand for labour are not so great in agriculture as in manufacture, the seasonal variations in demand are greater, and the problem that confronts the farmer is to distribute his labour supply evenly throughout the year. The extent to which such even distribution is possible depends largely upon the size of the farm and the diversity of the agriculture carried on, but even when these two factors are settled there is ample scope for good management in securing the maximum evenness of distribution within the existing system.[3] The development of supplementary employment of a non-agricultural character, such as broom-making and other cottage industries, may assist in the utilisation of the labour supply to the full.[4]

Scientific management in the sense that it is used in industrial organisation is capable of being adopted within somewhat narrow limits on the farm. Professor Carver points out that the expert corn huskers in the corn belt of the United States have devised a method by which the number of motions involved in husking an ear of corn and throwing it into the wagon is reduced to an absolute minimum, and that the old hand binders of grain used to work on an equally precise method. " Such examples as these," he continues, " furnish a basis or a beginning for the scientific study of farm management on a broader scale."[1] It is impossible, however, to believe that the familiar methods of scientific management—time and motion study and so on—will ever be applied to any great extent to an industry where the labour is so diverse and individualist as it is in farming. Any advance in this direction, it may be safely stated, must await the further development of farm costing systems.[2]

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[1] *Op. cit.*, pp. 331–2.

[2] *Contemporary Review*, February 1928, p. 147. Carver expresses the opinion that "more labour is wasted on the farms of this country through bad management than through any other single cause," *Principles of Rural Economics*, p. 200; and see *Agricultural Economics in the Empire*, p. 8; Taylor, *op. cit.*, p. 109; Carver, *Select Readings*, p. 644.

[3] Warren, *op. cit.*, p. 337.

[4] Nourse, *op. cit.*, pp. 810–11.

The third method of reducing labour costs is by the adoption of labour-saving devices in respect of implements and power. The farmer in considering whether it is worth his while to replace men by machines will be guided by the ordinary principles of the law of substitution, and hence the point at which such a replacement is profitable recedes with every advance in the efficiency of labour. Since the efficiency of machinery tends to advance more rapidly than that of human labour, the possibilities of such substitutions are becoming greater with the progress of time.[3]

Machinery may replace human labour for the purpose either of producing power or of performing certain mechanical operations. Power is provided by either men, animals, wind, water, steam, petrol or electricity. Whichever of these sources is found to be most economical tends to replace other less efficient sources. As regards the performance of certain common farm operations, the progress of machinery in recent times has been very great. The productive capacity of agriculture has increased enormously in the last century owing to the improvement of existing machines and the introduction of new machines, with the result that the labour cost of production has been proportionately reduced.[1] There is every reason to suppose that this economising progress will continue, and will tend to outweigh the difficulties of feeding a growing population from a limited area of land. Suggestions are not wanting that future inventions in cultivating machinery may completely revolutionise the whole basis of agriculture.[2] At the same time it must be remembered that the possibilities of performing work by machinery are not so great on the farm as in the factory, owing to the shortness and irregularity of the time during which the machine can be worked and the impossibility of reducing many agricultural operations to routine processes. It would therefore seem that, in the present state of our knowledge, the limits of further advances are somewhat narrow. The most immediate progress will probably be in the increased use of petrol and electricity as sources of power.[3]

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[1] *Principles of Rural Economics*, p. 271.

[2] Nourse, *op. cit.*, p. 313 ; Hall, *op. cit.*, p. 146.

[3] On how the farmer should apply the principle of substitution, see Taylor, *op. cit.*, pp. 166–8.

The possibility of saving labour by machinery is of course intimately associated with the size of the holding. Many machines require a rather large area to be employed at all, while others require a large area to be worked profitably. It has already been shown how close a connection there is between the size of farm and the efficient utilisation of machinery. If farms are unduly small, three methods are available for the attainment of the maximum benefits of machine production: specialisation, co-operation, or consolidation.[1] Inside the limits of existing holdings, the most efficient utilisation of machinery is attained by spreading its use as evenly as possible through the year. This problem of farm management is partially solved by diversifying the production, but, as against this, it must be remembered that the most effective machinery is often that which is particularly adapted to specialised processes.[2]

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[1] An excellent paper on " The Influence of Farm Machinery on Production and Labour," by H. W. Quaintance, is reprinted in Carver's *Select Readings*, p. 32. Mr. Quaintance shows that the efficiency of production in American farms increased by 33⅓ per cent. between 1850 and 1900 by reason of the introduction of machinery. The increase in the efficiency of some farm processes increased by a much larger percentage, as is shown by a table at p. 48. See also Gray, *op. cit.*, pp. 161–3 ; Taylor, *op. cit.*, pp. 111–6 ; Nourse, *op. cit.*, pp. 271–7 ; Boyle, *Agricultural Economics*, p. 115 ; Augé Laribé, *op. cit.*, p. 57.

[2] Taylor, *op. cit.*, p. 118 ; Dampier-Whetham, *Politics and the Land*, p. 187.

[3] Orwin, *Agricultural Tribunal of Investigation*, p. 306 ; Rew, *op. cit.*, pp. 70–1 ; Nourse, *op. cit.*, p. 211 ; *Report of Business Men's Commission on American Agriculture*, p. 136 ; Borlase-Matthews, *Electricity on the Farm.*

There is no doubt that the introduction of labour-saving devices, while of the greatest advantage to cheap production, has led to the relative, if not the absolute, decline of the rural population in practically every country. Labour-saving inventions in manufacturing industry do not necessarily lead to any decrease of employment, because the number of factories may be increased, but the supply of land is limited, and therefore anything that increases the output of each worker must lead to the displacement of a certain amount of agricultural labour. The relative decrease in rural as compared with urban population, deplorable though it may be from the social point of view, is an indication of the wonderful progress that has taken place in the efficiency of agriculture. A smaller number of farm workers is required now than formerly to supply the food of a given population and a larger population could be maintained on the land only at the cost of a lowering of its standard of living.[3]

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[1] Nourse, pp. 268–9. On the difficulties of co-operative ownership of machinery, see Venn, *op. cit.*, pp. 300–1.

[2] Warren, *op. cit.*, pp. 344–54; Nourse, *op. cit.*, pp. 268–9; Taylor, *op. cit.*, p. 117; Marshall, *op. cit.*, p. 651.

[3] Gray, *op. cit.*, pp. 359–61; Taylor, *op. cit.*, pp. 273, 579–82; Warren, *op. cit.*, pp. 31–2; Hall, *op. cit.*, p. 147; Dampier-Whetham, *Politics and the Land*, p. 187; *Agricultural Tribunal of Investigation*, pp. 33–4, 105–6; *Report of Business Men's Commission on American Agriculture*, pp. 105, 142; Augé Laribé, *op. cit.*, p. 298; *The Economist*, Sept. 29, 1928, p. 544.

In the next chapter it will be indicated that the desire to stem the rural exodus is one of the commonest justifications of State interference with the free play of self-interest on the part of agricultural producers; it is sufficient at this point to emphasise that such interference when it takes place is not undertaken in the interests of efficient production but for some other motive. From the point of view of mere efficiency, an increasing volume of production accompanied by a stable or declining population is a thoroughly healthy sign. The standard of living of those who remain on the land is raised owing to increased output per man, while the demand for labour as a whole increases owing to the production of cheap food. In the long run, of course, the labour displaced in one industry is absorbed in others. The machines themselves are the product of much labour, generally of a higher type than that which they displace. As Marshall points out: "the substitution of capital for labour is really the substitution of labour, combined with much waiting, in the place of other forms of labour combined with little waiting." The transition stage may, of course, be attended by much suffering on the part of the workers who are actually displaced, and the alleviation of such transitional inconveniences must form part of the social policy of every civilised State.[1]

(*c*) *The Cost of Capital.*—The possibility of introducing labour-saving devices and improved power and implements depends directly on the farmer's supply of capital and credit. Without adequate capital the adoption of improved methods is quite impossible. "Among the questions of agricultural policy which have aroused most interest in recent years and have given rise to most discussion, the question of credit figures prominently. There is, in fact, no problem of land improvement, of irrigation, of colonisation, of changes in the system of cultivation in which the problem of credit is not present as an essential factor."[1] Every new machine requires ready money for its purchase, and every improvement in the scale or the method of farming also requires ready money to finance its inception. The cheapening of the supply of capital and credit, therefore, operates not only directly to reduce the cost of one of the principal factors of production, but also indirectly to make possible the increase of efficiency of production in other respects. The Central Landowners' Association states that "the access to credit is the foundation of progress and development."[2]

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[1] *Principles*, p. 523. The way in which this tendency works out in practice is explained in an excellent article and correspondence in *The Nation* of March 17 and April 7, 1928.

The needs of farmers in regard to credit are of several different kinds. They may be classified either according to the period for which the credit is needed, the purposes for which it is sought, or the security on which it is based.[3] At every stage of agricultural production capital or credit facilities are required by the farmer. In countries where the landlord and tenant system does not prevail, capital is required for the purchase of the farm. The farm when purchased must be rendered fit for cultivation by means of drainage, building, and fencing. If these operations have been performed by the previous owner their cost will be added to the purchase price, and will therefore have to be met either directly or indirectly by the new owner. These outlays need not usually be incurred by a tenant or metayer, and it is one of the characteristic disadvantages of a system of peasant proprietorship that the farmer often exhausts his available capital on acquiring his holding and putting it into order, and has nothing left with which to provide working capital for the purchase of stock, seeds, manures and the other raw materials of production. Finally, there is the need for marketing credits. Owing to the length of the production process and the irregularity with which the farmer receives his income, there is no industry where the need for credit facilities is so constant as in agriculture.

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[1] C.E.I. 36, p. 651; *Agricultural Tribunal of Investigation*, pp. 104, 109–110; *Departmental Committee on Agricultural Credit in Ireland*, Cd. 7375, 1914, p. 13.

[2] *Report on Agricultural Policy*, 1928. The value of the annual output bears a lower relation to the capital invested in agriculture than in other industries—25 per cent. as compared with 100 per cent. The interest charge in production is therefore very great, and the cost of capital is consequently of exceptional importance. *Year Book of U.S. Department of Agriculture*, 1926.

[3] Taylor, *op. cit.*, pp. 194–5.

Although credit is of fundamental importance to agriculture, the obtaining of credit by farmers is peculiarly difficult. In the first place, the great majority of farmers have little to offer in the way of security. The peasant proprietor has as a rule nothing to offer but his land, and the tenant has not even that. In some countries, as for example Ireland, small holders are forbidden to mortgage their holdings beyond a certain amount. All that is available by way of security is frequently the farmer's labour and his crop, both highly perishable, uncertain and non-realisable assets. Even when the farm itself is available, it is not always a satisfactory security for borrowers ; land fluctuates widely in price and is often difficult to sell for all sorts of local reasons unconnected with its actual value. Complications in title are possible, and difficulties from agrarian disturbances are not unknown.[1]

The length of the production process, which increases the farmer's need for credit, increases also his difficulty in obtaining it. Joint stock banks cannot tie up their assets for long periods, and are incapable, therefore, of providing credits of sufficient length. Production is not only prolonged but risky, and the danger of the security proving inadequate is thereby increased. Receipts come in in an irregular flow, and swift calling in of loans is therefore frequently impossible.[2] The predominant production unit is small, and the credit resources of the joint stock company are not available. The growth of collective and concentrated enterprise that has characterised industrial production in modern times has no parallel in farming. "As a producer, the farmer has remained dependent on his own resources, and has consequently gained few of the benefits which association in collective joint stock undertakings has given to producers and traders elsewhere. In agriculture the savings of the general community have remained relatively inaccessible. . . . It is not open to the farmers to 'capitalise the future' or to borrow on 'estimated earning power' in the manner in which it is open to corporate industry; there is no commercial measure of these things in agriculture acceptable to the ordinary investor. While, therefore, manufacture raises its capital by subscription, the farmer must raise much of his by credit. Agriculture must fall back on its tangible assets, its land, buildings, stock and crops."[1] There is a lack of proximity between the banker and the farmer which makes it difficult for the former to judge of the credit needs or the credit worthiness of the latter. Indeed it is not easy for a banker to gauge correctly the financial standing of farmers, who often cannot gauge their own by reason of the risks of production and inadequate accounts.[2]

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[1] *Departmental Committee on Agricultural Credit in Ireland.* 1914, Cd. 7375, p. 12 ; Ely and Moorhouse, *op. cit.*, p. 42.

[2] *Departmental Committee*, pp. 11–12.

The terms on which credit can be obtained depend on the prevailing conditions of supply and demand. The principal agents of supply are, first, professional lenders, such as banks of all kinds, village usurers and itinerant money-lenders, second, the landlords in certain systems of tenure, and third, the agencies through which the farmer markets his products. It is only within narrow limits that the farmers, whether acting independently or in organisation, can influence the supply of credit. In order that any substantial changes be made in these lending agencies, the intervention of the State is nearly always needed. The extent to which the State can increase the supply of capital by legislation regarding banking, land tenure and marketing will be dealt with in a later chapter; all we are concerned with here is to point out that the farmers themselves are comparatively helpless to reduce the cost of capital by changes on the supply side. The only things they can do in this respect are, first, to increase the willingness of lenders to lend, second, to form banks of their own by co-operative organisation, and third, to reform the marketing system so as to reduce the power of the middlemen who now help to finance them. The last of these matters belongs to the discussion on marketing; it is sufficient to say here that the provision of credit by middlemen is objectionable, first, because it is usually expensive, and secondly, because it hampers the farmer's liberty of action.[1] Moreover, credit apparently provided by middlemen is frequently provided indirectly by the banks with an added intermediate profit.[2]

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[1] *Report on Agricultural Credit*, Ministry of Agriculture and Fisheries, Economic Series, No. 8, pp. 7–8.

[2] *Departmental Committee*, p. 13; Orwin, *op. cit.*, p. 118.

The willingness of lenders to lend can be increased by the farmers improving their own credit-worthiness by establishing a reputation for prompt repayment and efficient organisation and management. The keeping of accounts is important in this respect.[3] Farmers have it in their power to increase the value of the security they have to offer in many ways—for example, by not making excessive demands for credit, by punctually paying all instalments of interest when due, by standardising and improving the quality of their products, by keeping their land and buildings in good order and repair, and by adopting a system of crop and live-stock insurance. A proper diversification of farming may enable the payment of interest to be spread in an even manner that will attract lenders.[4] The exercise of a wise discrimination by the banks in the selection of farmers to whom they will advance loans based on the respective efficiency of different applicants may help to stimulate good farming in general. Thus, while efficient production may increase the banks' willingness to lend, the knowledge of this fact may increase the efficiency of the majority of farmers who may wish to borrow some day from the banks.[1]

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[1] *Report on Agricultural Credit*, pp. 31–4; Taylor, *op. cit.*, pp. 215, 425; Gray, *op. cit.*, p. 335; Dampier-Whetham, *Politics and the Land*, pp. 200–1; Macklin, *op. cit.*, pp. 158 *sq.*

[2] Boyle, *Marketing of Agricultural Products*, pp. 140–50.

[3] Taylor, *op. cit.*, p. 209; Gray, *op. cit.*, p. 335.

[4] Taylor, *op. cit.*, pp. 210, 219–26; Nourse, *op. cit.*, p. 697.

But by far the most important thing that the farmers can do to increase the supply of capital and credit is to form co-operative credit associations. By pooling all the resources of the neighbourhood such associations enable the farmers to finance their industry largely independently of what the banks will lend, and if further borrowing outside their own ranks is necessary the banks will usually be found more ready to assist societies than individuals. The provision of credit was the earliest manifestation of co-operative activity in agriculture, thereby indicating the urgency of the need to be supplied.[2] In spite of the numerous developments which have taken place in other directions the credit society still remains the pivot of the whole co-operative movement.[3] In order that the maximum advantage may be realised, it is desirable that the various local societies should be co-ordinated in a central federation which will act as a clearing house for the agricultural thrift and borrowing of the whole country. Although the formation of such organisations is within the power of the farmers themselves, as is shown by the example of Germany, in fact it has usually been assisted by a certain amount of State aid.

(*d*) *The Cost of Raw Materials.*—Another cost that must always be incurred is the purchase of the raw materials of production, as, for example, seeds, manures and fertilisers. Strictly speaking, raw materials do not constitute a separate element of cost; their expenses can be resolved into previous expenses for wages and interest; nevertheless, it is convenient to consider them in isolation.[1] The cost of raw materials can be reduced by the formation of co-operative purchase associations. This is an economy rather in the business than in the craft of farming, and is analogous to the economies which we shall discuss in connection with marketing. From one point of view, however, it may be regarded as an economy on the craft side of the industry, since it aims at the most advantageous utilisation of the farmer's capital, and may thus be considered as one method of reducing his capital costs.[2] Co-operative purchase societies of this type are developed at an earlier stage of organisation than sale societies because they are comparatively simply managed; they are generally more successful than selling societies, because buying is always easier than selling, and because they are unaffected by considerations relating to the distance of the market which are so vital to the success of selling societies.[3] The principal advantages which such co-operative organisation affords are, first, the strengthening of the bargaining power of the individual farmer by uniting the purchasing power of numerous buyers into one bargaining unit; second, the possibility of obtaining goods of guaranteed or standardised quality; and third, cheap transport rates owing to the consignment of goods in large quantities.[4]

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[1] Middleton, *Report on the Development of Agriculture in Germany*, Cd. 8305, p. 22.

[2] C.E.I. 36, p. 621.

[3] *Agricultural Tribunal of Investigation*, pp. 68, 104; *Royal Commission on Agriculture in India, Abridged Report*, p. 51.

(*e*) *The Cost of Taxation.*—There is one type of cost the reduction of which is almost impossible by farmers themselves even when highly organised, namely, taxes on land or on any other factor of production. These taxes are frequently very oppressive burdens, which, when they cannot be shifted, are a clear addition to the cost of production of the farmer. Their reduction or abolition is, however, completely outside the power of the individual farmer or even of farmers acting in organisation. Taxes are imposed by some public authority either national or local, and they can be removed only by the same body that imposes them. The question, therefore, of the reduction of the farmer's cost of production by means of changes in taxation must be reserved for the following chapter, in which public policy towards agriculture is discussed. The only reason it is mentioned here is in order that it may not be overlooked by the reader.

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[1] Taussig, *International Trade*, p. 61.

[2] C.E.I. 36, p. 623.

[3] C.E.I. 36, p. 628; C.E.I. 14, p. 6; *Agricultural Tribunal of Investigation*, p. 138; Venn, *op. cit.*, p. 284.

[4] C.E.I. 36, pp. 623–5. Examples of such societies and their federations in several countries are given on pp. 625 *sq.* of this Memorandum. Raw materials are a relatively small element in costs of production. Harkness in *Economic Journal*, March 1928, pp. 61–2. On purchasers' associations generally there are some valuable remarks in Pigou's *Economics of Welfare*, pp. 281, 291–5.

(*f*) *Rent as an Element of Cost.*—In certain cases there is a further very important outlay which the farmer has to incur, namely, his rent. Rent proper is, however, not an element in cost, but a resultant of the general forces affecting demand and supply. The famous formula that " rent does not enter into cost of production " has given rise to a good deal of controversy, mainly because its precise meaning has not always been fully understood. It is possible that it would be better to avoid the formula altogether ; Edgeworth refers to " the misleading associations of this unfortunate phrase " ; and Marshall, finding that the ordinary man is " offended " at the phrase, suggests that its use may be "inexpedient."[1] Nevertheless, the phrase expresses a profound truth.

Of course it is never suggested that a fixed sum payable over a period, the amount of which is settled either by custom or by contract, does not constitute an element of cost for the individual farmer, for whom land is but one form of capital. Customary payments for land, even when they are described as rents, are usually analogous to a tax on the acreage of the land ; they are fixed as a rule without any regard to the economic rent, and may constitute, therefore, a true element in cost. Many contractual rents also do not correspond with the economic rent of the land. Even when full allowance has been made for the portion of the so-called rent that represents interest on the landlord's capital and earnings of his management, the residual payment may still be considerably different from the true economic rent. Obviously, so long as a payment of this kind continues, it must be covered before the farmer makes any profit. If the amount of such contractual rent was based on an estimate of the economic rent of the land, and if, owing to unexpected changes in the cost of production or in the prices of the commodities produced, the contract rent proves in fact to be in excess of the economic rent, in that case the farmer would suffer a loss. But that loss would be incurred, not because the economic rent was an element in his costs which the price of his produce failed to cover, but because he had made a wrong estimate of what the economic rent would be. If the lease soon came to an end, the contractual rent in this case would probably be adjusted to meet the new conditions, but so long as the old lease continued to run the annual payment described as rent would remain one of the costs of production which would have to be met before any profit was made.

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[1] Edgeworth, *Papers*, i. 32 ; ii. 69 ; Marshall, *Principles*, p. 436 n.

It is also true, as explained by Marshall, that an increase in the demand for land for other uses manifests itself in a rise in the rental value of all land in the neighbourhood, leaves less land free for growing any one particular crop, and thus makes it worth while to force larger amounts of that crop out of the remaining land available for it, thereby indirectly raising the marginal expenses of that crop and its price. In this case " a rise in rent does serve as a medium through which the growing scarcity of land available for hops and other produce obtrudes itself on his notice." The high rents, however, remain the resultants and not the causes of the general increase in the price of produce.[1]

It is important in discussions on this subject that the true economic rent should be isolated from the other payments with which it is frequently combined. Of course the ordinary contract rent usually includes a payment representing interest on capital. In short periods this distinction is fairly obvious, but in long periods that which is really interest on capital, such as permanent improvements by many generations of landowners, is sometimes regarded as rent, whereas it is necessary to remunerate the landowners for their supplementary costs. These distinctions are of the utmost importance in considering the incidence of taxes on land.[1]

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[1] *Principles*, p. 436 ; Ashby in *Scottish Journal of Agriculture*, vi. 388.

It is only when all these precautions have been taken that the true rent can be studied in isolation. Such rent represents the " annual public value of the land," that is, its annual value arising firstly from " its position, its extension, its yearly income of sunlight and heat and rain and air," and secondly from the work and outlay of men other than its owners.[2] This definition makes clear that natural fertility, situation, and environment are all equally relevant in determining the annual value of land, or rent in its strict sense.[3] The amount of this rent is " the excess of the value of the total returns which capital and labour applied to land do obtain over those which they would have obtained under circumstances as unfavourable as those on the margin of cultivation." [4] Rent, in this sense, is always the resultant and never the cause of a given level of costs and prices ; it stands in a fundamentally different category from the other outlays of the farmer.

The amount of the rent is, however, very important in considering the total gains or profit of agricultural production. The amount of the rent yielded by any particular piece of land fluctuates according to the price of the crops produced, and high rents are a sure index of agricultural prosperity.[1] The rent arises quite independently of any human arrangements; it is an inevitable consequence of the law of diminishing returns, which operates whether the land is farmed on a subsistence or a commercial basis, whether it is public or private property, and whether it is cultivated by its owner or by tenants.[2] These various matters cannot affect the existence of the rent, which arises inevitably from the very fact of differential advantages between different pieces of land. Human arrangements, such, for example, as the nationalisation of land or laws relating to land tenure, do however determine who shall enjoy the rent when it has risen.[3]

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[1] Marshall, *Principles*, pp. 422, 425–6, 630.

[2] *Ibid.*, pp. 156, 433–4. The question of how far land can have any value apart from previous investments of capital in it by man is discussed on p. 634, and see Walker, *Political Economy*.

[3] Marshall, *Principles*, p. 633.

[4] *Ibid.* p. 427.

(g) *The Influence of Land Tenure on Cost.*—Land tenure is primarily relevant in considering the distribution of the agricultural income, but it has important reflex bearings on production, just as the method of wage payment in industry, while primarily a problem of distribution, may influence the output and profits of a business. The International Institute of Agriculture recommends the study of systems of land tenure "because they stand in the closest relation to production and it is essentially from the latter point of view that they can and should be treated."[4] The system of land tenure while not directly affecting the cost of production in agriculture may affect it indirectly by raising or lowering the cost of some of the factors of production already discussed.

Security of tenure in the sense of security against the confiscation of the fruits of the cultivator's efforts and sacrifices is essential for good farming. The system of tenure which gives the greatest security is peasant proprietorship, but practically complete security may be obtained under a tenancy system when provision is made for adequate compensation for improvements and disturbance. Difficult questions may arise in practice regarding the valuation of such compensation, but the important thing is that the security be obtained at all costs. In its absence, agricultural enterprise is impossible; long period schemes of improvement will not be undertaken; and a type of cultivation may be practised that will exhaust the permanent fertility of the soil.[1]

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[1] Marshall, *Principles*, pp. 161 n., 632.

[2] *Ibid.*, pp. 629, 635; Carver, *Distribution of Wealth*, p. 208.

[3] Marshall, *op. cit.*, pp. 427, 629; Nourse, *op. cit.*, p. 614; Ashby in *Scottish Journal of Agriculture*, vi. 387.

C.E.I. 36, p. 16.

Systems of land tenure may be divided into three main divisions: peasant proprietorship, share-tenancy, and the English system of cash tenancy. Each system has distinctive merits and defects from the point of view of the attainment of efficient and cheap production.

The great advantage of peasant proprietorship is that it confers the utmost security against confiscation of improvements. Peasant proprietors are found to co-operate better than tenants paying rent, and therefore a system of peasant ownership may aid in the development of economies of production in so far as these depend on co-operative organisation.[2] These are its chief economic advantages, although it has numerous moral, social and political advantages as well with which we are not concerned. The defects of the system are that it tends to narrow the outlook of the farmer and to fasten his attention on his farm to the neglect of everything else, even the education of his children. Peasant proprietors usually experience great difficulties in obtaining capital and credit in spite of the wide degree of ownership which they have in their land; most of their savings have probably been devoted to purchasing their land, leaving them short of capital for improvements and working capital, and they are the special prey of the usurer. The deflection of the farmer's capital from cultivation to purchase is the outstanding evil of this mode of tenure. Another danger is that a system of peasant proprietorship may stereotype an uneconomic type of farm or may tend to produce undue subdivision of holdings. Peasant proprietors usually cultivate more intensively than tenants; their gross produce may be very great but their net produce relatively small. Changes in prices are reflected in the standard of living of the farmer and his family rather than in an alteration in their output. Theirs is the most inelastic labour supply that can be conceived.[1] Many of these defects are accidental rather than essential and can be remedied. The narrow vision and irresponsiveness to change can be improved by education, and the difficulties in respect of capital met by co-operative effort or State assistance. Moreover, in actual practice the economic disadvantages of this system of tenure may be outweighed by its indirect social advantages; and the ownership of land in progressive countries may lead to a large capital increment owing to the land's becoming increasingly valuable. Any profit of this kind enjoyed by the small landholder comes to him in his capacity of a land speculator and not in that of an efficient and successful farmer.[2]

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[1] *Agricultural Tribunal of Investigation*, pp. 37–8, 306, 310; *Report of Business Men's Commission on American Agriculture*, p. 107.

[2] Marshall, *op. cit.*, p. 645; *Agricultural Tribunal of Investigation*, pp. 257, 285; Taussig, *Principles*, ii. 355; Venn, *op. cit.*, p. 292.

Share-tenancy occupies an intermediate position between peasant proprietorship and the English system of cash tenancy. This mode of tenure assumes innumerable forms. In Europe it is usually called metayage, and in America share-tenancy. The metayer or the share tenant usually pays in return for the use of the land a certain share of the produce, such as one-half or one-third. The landlord supplies most of the capital required for the cultivation, but the amount so supplied differs in the various types of share-tenancy. True metayer tenants or share-renters usually provide their own implements and live stock, and pay the landowner one-third or one-quarter of their produce, while lower types of tenant, the *maître valet* or share-cropper, supply nothing but their labour and pay the landowner, who provides all the capital requirements, one-half of the produce. This latter type of arrangement is barely distinguishable from an ordinary hiring of farm labour ; it may be regarded as a method of wage payment rather than as a variety of land tenure. In spite of the numerous differences between the share-tenancy arrangements in different countries, they all display the essential feature of an exchange in kind between the land and capital of the landowner and the labour of the cultivator. The advantages of this system are that the capital and credit difficulties of the small holder are surmounted and that the landowner can direct and supervise the nature of the cultivation. The disadvantage is that it may lead to constant and incessant disputes between the two parties to the contract regarding the type of operation to be undertaken, the day-to-day management of the farm, and the division of the produce. Disputes on the last matter will be reduced to a minimum when only a single crop is grown, as, for example, in the wheat-growing area of Canada. Moreover, the metayer will, if left to himself, cultivate less intensely than a cash tenant, because " when the cultivator has to give to his landlord half of the returns to each dose of capital and labour that he applies to the land, it will not be to his interest to apply any doses the total return for which is less than twice enough to reward him."[1] The advantages of the system outweigh the disadvantages only in cases where the farms are small, the tenants poor, and the landowners willing to supervise the cultivation of the land in person. When these conditions are present metayage may be productive of excellent cultivation ; whereas when they are absent some other system of land tenure will probably yield better results. The differences in these respects between the circumstances of their two countries account for the fact that, while French writers for the most part approve of metayage, American writers condemn share-tenancy as a most undesirable form of land-tenure.[1]

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[1] Pigou, *Industrial Fluctuations*, p. 178.

[2] Marshall, *op. cit.*, pp. 429–30, 646–7; *Agricultural Tribunal of Investigation*, pp. 36, 343; Carver, *Principles of Rural Economics*, pp. 226–30; Taylor, *op. cit.*, p. 182; *Economic Essays in Honour of J. B. Clark*, p. 223.

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[1] Marshall, *op. cit.*, p. 644.

The characteristic of the English system is that "the landlord supplies and in some measure maintains those improvements which are slowly made and slowly wear out," payment being made by means of a fixed cash rent.[2] The advantages of this system are that it involves the minimum of friction and interference between the parties, that the long period capital requirements of the tenant are provided by the landlord, and that the size of holding and the type of cultivator may be selected so as to provide the most suitable method of production to meet changing conditions of demand and of prices. The English system frequently meets the short term as well as the long term credit needs of the tenant by the landlord's delay or forbearance in collecting the rent.[3]

The disadvantages of the cash-rent system are that the tenant may have difficulty in raising his short period or working capital, for which he may have to pay a usurious rate; that in fixing the amount of the rent he may have miscalculated the future trend of prices and may have undertaken a burden which he is unable to bear; and that, in the absence of some legal provision for compensation, a feeling of insecurity may be created or a wasteful type of cultivation pursued. There is also a danger, as pointed out by Marshall,[1] that landlords may be unwilling to provide a sufficient number of small farms on account of the high costs that must be incurred both in creating and in consolidating them. There may thus arise a shortage of suitably sized farms.[2] Moreover, it is doubtful how far the peculiar advantage of the English system, namely, the provision of the long period capital needs of the tenant, will endure in a time when landowners themselves experience difficulty in raising loans. Moreover, the willingness, as distinguished from the power, of landlords to make advances to their tenants on easy terms depends largely on the amenity value which land possesses, and any attempt to diminish that amenity value by legislation or otherwise may result in drying up the sources of capital and credit for the cultivators.[3]

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[1] Jouzier, *op. cit.*, pp. 400–6; Augé Laribé, *op. cit.*, p. 225; Venn, *op. cit.*, pp. 43-50; Conacher and Scott, *Report to the Board of Agriculture in Scotland on Agricultural Credit in France*, pp. 52–8; Lord Ernle in *The Nineteenth Century*, July 1920; Marshall, *op. cit.*, pp. 643–5; Carver, *Principles of Rural Economics*, pp. 231–4; Nourse, *op. cit.*, pp. 652–5; Taylor, *op. cit.*, pp. 341–60; Conacher in *Scottish Journal of Agriculture*, ii. 374; *Report of the International Labour Office on the Representation and Organisation of Agricultural Workers*, Geneva, 1928, pp. 35–44.

[2] Marshall, *op. cit.*, p. 636. Although tenancy is still the characteristic English system of tenure it is ceasing to be universal. In 1927 36 per cent. of the land in England was owned by occupiers, *Agricultural Statistics*, 1927. On the growth of occupying ownership in Scotland, see *Agricultural Output of Scotland*, 1925, Cmd. 3191, p. 51.

[3] Dampier-Whetham, *Politics and the Land*, pp. 199–200; *Report on Agricultural Credit*, p. 34. This system possesses especial advantages if, for any reason, the capital value of land is inflated for non-economic reasons, as for instance on account of a social or political prestige attaching to land ownership. Carver, *Principles of Rural Economics*, p. 228; Boyle, *Agricultural Economics*, pp. 20–9.

It appears from the above discussion that the system of land tenure affects costs of production only indirectly through its reaction on the factors which affect cost directly. The attainment of the most advantageous type and size of farm, the price paid for supplies of capital and credit of various kinds, the efficiency, industry and adaptability of the labour supply, and the possibility of the development of co-operative organisation, are all matters which may partly depend upon the system of land tenure that prevails. Apart from these indirect effects, land tenure is a problem of distribution rather than of production; or, as Marshall well puts it: "the general conditions of demand and supply, or their relation to one another, are not affected by the division of the produce into the share of rent and the share needed to render the farmer's expenditure profitable."[1]

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[1] *Op. cit.*, p. 654.

[2] Levy, *op. cit.*, pp. 120–4, 184; Sidgwick, *Principles of Political Economy*, p. 480.

[3] Marshall, *op. cit.*, pp. 635–6, 648–9; Orwin and Peel, *The Tenure of Agricultural Land in England*; *Report on Agricultural Credit*; Dampier-Whetham, *Politics and the Land*, p. 123. Suggestions have not been lacking for new compromise systems of land tenure, retaining the advantages and avoiding the defects of the existing system; see, *e.g.*, Pratt, *The Transition in Agriculture*, p. 261.

Sub-section 4. *The Costs of Marketing.*

(*a*) *The Functions and Agencies of Marketing.*—Marketing is part of the productive process, and no hard and fast line can be drawn between the cultivating and the business branches of the farmer's operations. Strictly speaking, marketing includes the farmer's transactions both in buying and selling, but it is generally confined to the selling side of his business, and is used to cover "all activities involved from the time the product leaves the producer until it reaches the consumer."[2] Marketing creates time, place and possession utilities which increase the value of the farmer's produce as much as if not more than the physical utilities which are created by its cultivation. Assuming the existence of a given price, it is obvious that the farmer's profit will be increased if the expense of bringing his goods to market is reduced, just as materially as if the reduction took place in his expenses on the farm. The possibility of reducing costs of production of some crops is greater on the cultivating than on the marketing side, but there is no crop in which economies of marketing within limits are not attainable. The reduction of the costs of marketing is therefore one aspect of the question of reducing costs generally. Such reduction may be obtained by means of the adoption of the third class of inventions already referred to, namely, business inventions.[3]

The progress of such inventions in recent years has doubtless tended to reduce the cost of marketing. The farmer's other costs have, however, been reduced more rapidly, so that the reduction in marketing costs has been relatively slow. The reduction has been greatest in new countries where the opening up of new areas and the predominance of extensive cultivation have emphasised the necessity of reducing transportation charges to a minimum, and where farming has been, from the first, conducted on a commercial basis.[1] In older countries the progress in this direction has not been so rapid, and in such countries it is in the sphere of marketing that the greatest possibilities exist to-day for the improvement of the farmer's position. The subject of marketing has come therefore to occupy a foremost place in the study of agricultural economics. The International Institute of Agriculture has stated that " the marketing of agricultural produce is one of the most interesting of problems from every point of view." [2]

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[1] P. 427.

[2] Taylor, *op. cit.*, p. 409.

[3] *Ibid.* pp. 409, 428; Boyle, *Efficient Marketing of Agricultural Products*; Carver, *Elements of Rural Economics*, p. 192.

Although the cost of marketing in agriculture is considerably less than in manufacture,[3] it is generally regarded as being unnecessarily high. Undoubtedly the common denunciation of middlemen as grasping profiteers who exploit both the farmer and the public for their own advantage is frequently based on an insufficient appreciation of the numerous difficulties and risks of the marketing process. The high cost of marketing is frequently, as we shall see, the result of disorderly production on the one hand, and of disorderly consumption on the other, and the large profits of middlemen are, as often as not, the result rather than the cause of the high expenses of marketing. A great deal of caution is therefore necessary before conclusions on this subject are reached.[4] Nevertheless, it is possible to state generally that the " spread " between what the consumer pays and what the farmer receives is at present unnecessarily large. The Linlithgow Committee state that "the spread between producer's and consumer's prices is unjustifiably wide,"[1] and the International Institute of Agriculture has accepted this opinion as correct.[2]

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[1] *Agricultural Tribunal of Investigation*, p. 35 ; Taussig, *International Trade*, pp. 181–2.

[2] *Preliminary Report on the Marketing of Agricultural Produce*, 1925, p. 3, referred to throughout the remainder of this subsection as *Prelim. Report*. See also C.E.I. 36, p. 16 ; *Report of Committee on Stabilisation of Agricultural Prices*, p. 80.

[3] Marshall, *op. cit.*, p. 287.

[4] Weld, *The Marketing of Farm Produce*, p. 188.

To assert that the costs of marketing are too high is not to suggest that they are totally avoidable. The idea that all middlemen are parasites who perform no useful service in return for their reward is one that can be held only by very ignorant people. It may be true that no middle interest came between the cultivator of the soil and the consumer of the crop in a subsistence system of farming, but certainly as soon as farming became commercialised the need for some marketing functions immediately arose. With the growth of urban populations the problem of providing constant supplies of foodstuffs at regular intervals in areas where they are not grown makes necessary a highly complex organisation for adjusting supply to demand. As Boyle puts it, "The city consumer eats as a rule three times a day, 365 days in the year, food which did not grow in his city. The farmer, as a rule, produces the food in the summer season. In short, the supply of food is produced in the wrong place, at the wrong time, in the wrong quantity and of the wrong quality." These four maladjustments must somehow be overcome unless the city dweller is to starve. Their solution is found in the marketing organisation. This organisation performs many essential services; it comes into being in response to a demand for those services on the part of producers and consumers alike; and it is kept in being by the ordinary commercial motive of earning a profit. The real questions to be answered are not whether a marketing organisation is necessary, but first, whether the existing organisation is deriving an excessive remuneration for the services it renders, and secondly, assuming that it is doing so, whether it is possible to have those services performed

[1] *Final Report*, p. 11.

[2] C.E.I. 36, p. 614; *Preliminary Report on the Sale of Agricultural Produce, etc.*, Rome, 1925.

more cheaply by any alternative type of organisation. The mere fact that the middlemen are making a profit, far from being a reason for their abolition, is the only true justification of their existence.[1]

One way of appreciating the services rendered by marketing is to attempt to discover the disadvantages that would be incurred by farmers and consumers if no marketing facilities were available. Let us assume, in other words, that the middleman is eliminated and that all sales are direct from producer to consumer. Such direct selling is frequently recommended as one method of reducing the farmer's costs; the International Institute of Agriculture states that "if there is one thing in the discussions on the marketing of agricultural produce which arouses enthusiasm on the part of both producers and consumers it is the formula of direct relations between them."[2] Actual examples of such direct dealing are to be found in practice. Milk is frequently brought by the farmer in his own vans direct to the doors of the consumers, and market garden produce is often brought round from door to door by the grower. Such transactions depend upon the proximity of the farmer and consumer, and would not be possible if long distances intervened. Direct sales over long distances are, however, possible by means of the parcel post. In this case only one intermediary, namely, the post office, is employed, and the sales are for all practical purposes direct. The middlemen, if not eliminated, have been reduced to a minimum. Such sales by parcel post are frequently found very successful and satisfactory to all parties.[3]

The disadvantages of such a system except in a small number of cases must outweigh the advantages. In the first place, the farmer may have considerable difficulty in getting in touch with a city consumer at all, and may have to waste much valuable time that should be devoted to the cultivation of his land in advertising or otherwise seeking for customers. More time will be wasted in packing and despatching the parcel. Secondly, the cost of transportation of small consignments is always relatively high. Not only has more to be spent in relation to the value of produce in packing materials, but freight rates will also be higher per unit despatched. Thirdly, direct sale is impossible in the case of articles that have to be stored or processed before reaching the consumer. As examples of goods that require to be stored we may mention wheat and other cereal crops the production of which is seasonally irregular, and as examples of goods that require to be processed we may mention cotton, flax or any other crop that forms the raw material of manufacturing production. In the absence of some intermediate agent, storing and processing would have to be done either by the farmer or by the consumer. Fourthly, the consumer would not have the same liberty of buying just what he wants. His supplies would flow in on the basis of an order given days or weeks in advance and immediate emergencies in housekeeping needs would prove insurmountable. Moreover, he could not inspect the goods before buying them, but would be at the mercy of the consignor. Fifthly, the farmer would be exposed to numerous risks. He would run the risk of not being paid by a dishonest or insolvent customer, of finding himself with surplus supplies on his hands unsold, or of being bound to continue supplying his customer at a price fixed by contract which changing circumstances had rendered unprofitable. The conclusion of the International Institute of Agriculture on direct marketing is that, " in the great majority of cases the system has no possibility of working satisfactorily . . . it does not seem to have much likelihood of becoming a general practice."[1]

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[1] Boyle, *The Marketing of Agricultural Products*, p. 87; Weld, *op. cit.*, pp. 12–13; Taylor, *op. cit.*, pp. 410–13; Macklin, *Efficient Marketing in Agriculture*, pp. 30–33; *Prelim. Report*, pp. 9, 29–30.

[2] *Prelim. Report*, p. 15.

[3] Weld, *op. cit.*, pp. 398–9.

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[1] *Prelim. Report*, p. 15. Examples of the elimination of all intermediaries between producer and consumer except a producer's co-operative sale society

A consideration of these disadvantages which are inherent in direct selling makes clear the functions which a marketing organisation performs. The first disadvantage is removed by the existence of agencies to collect and assemble the farmer's produce ; the second, by transportation in bulk ; the third, by the existence of wholesale dealers who will overcome the effects of seasonal irregularities by storage and of manufacturers who will process goods ; the fourth, by the existence of retailers who are always ready to supply small quantities at short notice ; and the fifth, by the existence of some intermediate agent on whom the farmer can shift his various risks. There thus emerge the essential functions of marketing—namely, collection and assembly, transportation, wholesale dealing and manufacturing, retailing, and risk bearing. These are essential services " which enable the consumer to utilise the produce of farms."[1] They are indispensable in all sales, and must take place even when no middlemen exist. Agencies may be eliminated, but the essential functions cannot be abolished. The only change effected by the transition from a system of direct sale to one of selling through middlemen is that the essential functions are performed by special agents. In other words, a division of labour takes place and the farmer is enabled to devote his full time to his own proper function of cultivating his land. As to the benefit of such a division of labour there can be no two opinions.[2]

are given in the Institute's *Preliminary Report on the Sale of Agricultural Produce*, etc., pp. 9–10. The Institute registers the opinion in this Report that the existence of a second co-operative society representing the consumers would improve the marketing organisation in these cases. On direct marketing, see Weld, *op. cit.*, pp. 24–5, 397–402 ; Taylor, *op. cit.*, pp. 410, 427 ; Gray, *op. cit.*, pp. 350–3 ; Rew, *op. cit.*, pp. 163–5 ; Macklin, *op. cit.*, pp. 266–71 ; Jouzier, *op. cit.*, pp. 274 *sq.*

[1] Macklin, *op. cit.*, p. 28.

[2] Boyle, *op. cit.*, p. 87 ; Taylor, *op. cit.*, p. 432 ; *Prelim. Report*, p. 16. Different classifications of the functions of marketing are given by the various writers on the subject, but the above classification is roughly common ground to all. Credit is omitted because, as we said above, it is a function not properly belonging to middlemen though frequently performed by them. The Preliminary Report of the International Institute of Agriculture enumerates the

As the functions of marketing, as distinguished from the agents performing them, cannot be eliminated, it becomes a matter of prime importance that they should be performed as efficiently and cheaply as possible. The reduction of the cost, and not the elimination of the profits of the different agencies, is the central point of the marketing problem.[1] The ideal to be aimed at is that every single process in marketing should be undertaken by the type of agency that is calculated to do it most economically. "Perfection in marketing depends upon attaining the best possible relations between the functions and the agencies." [2] In considering the relative merits of the various competing types of agency—private, co-operative and governmental—no prejudice in favour of or against any of them should prevent one from judging each on its merits. There may be social arguments in favour of the co-operative method, just as there may be political arguments in favour of the governmental method, but, from the economic standpoint, there is nothing to choose between them. Whichever is calculated to perform any particular marketing operation most efficiently and at least cost must be chosen. The International Institute of Agriculture lays great emphasis on the need for detachment in considering the merits of the different types of agency. "Now the great question is precisely to study, without preconceived opinions and on the basis of facts, the relative value of private undertakings, co-operative societies and public bodies; it is unquestionable that each of these forms can

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following as the essential and auxiliary functions of marketing, (*a*) *assembling the produce*, (*b*) *conservation*, (*c*) grading and standardisation, (*d*) *transport*, (*e*) *distribution*, (*f*) packing and various manipulations, (*g*) financing, (*h*) *stimulation of the demand*, (*i*) assumption of risk. The essential functions are italicised. In the case of products which form the raw material of industrial production, as, for example, cotton, the marketing cycle comes to an end when they pass into the hands of the manufacturer, *ibid.*, p. 8. The various agencies that undertake each of the above functions are classified on pp. 12–14 of the *Report*. See also C.E.I. 36, p. 583; *Agricultural Economics in the Empire*, p. 13; and Nourse, *op. cit.*, p. 487.

[1] C.E.I. 36, pp. 583, 616; Taylor, *op. cit.*, p. 413; Boyle, *op. cit.*, p. 91.

[2] *Prelim. Report*, p. 4.

be defended or criticised on serious grounds; we will not enter into these discussions which form no part of our plan; it will suffice to say that a single standard of judgment must be applied—that of the best return at the lowest price."[1]

The marketing of agricultural produce, unlike its cultivation, is subject to the law of increasing returns. Once the crop has actually been grown, it ceases to be influenced by the peculiar physical properties of the soil which give rise to diminishing returns; the later handling of farm produce is indistinguishable from that of any other type of commodity.[2] The first conclusion therefore that we may reach is that large scale marketing units are more economical than small because of the various internal economies which they make possible. Not the least of these economies is specialisation, either in particular commodities or in particular steps in the marketing process. One would imagine *prima facie* that the greater the degree to which specialisation of either kind was carried the more satisfactory would be the result, because the more labour is divided the more efficient it tends to become. Moreover, the less efficient links in the marketing chain tend to be replaced by the competition of the more efficient. Nevertheless, there is no complaint more frequently heard than that there are too many middlemen. This complaint may mean, either that the process of specialisation has gone too far and that the marketing process has been too much subdivided, or that there are too many independent units working within each specialised division. The complaint that too many middlemen exist is often one way of saying that the business units are too numerous and that many of them are consequently small and inefficient. It refers, not to the degree of specialisation, but to the size of the individual business engaged in each operation. It is important that this distinction should be borne in mind; because it is probable that an increase in the degree of functional specialisation, accompanied by a decrease in the number of agencies performing each function, would cheapen the marketing process.[1]

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[1] *Prelim. Report*, pp. 16–17. The merits and defects of each type of agency are discussed in Macklin, *op. cit.*, pp. 285–98.

[2] Carver, *Elements of Rural Economics*, pp. 193, 216.

Indeed, it may be fairly safely concluded that the number of middlemen found in the marketing of any particular type of product is frequently the result rather than the cause of high marketing costs. Some commodities are naturally difficult to market owing to perishability or other conditions, and these peculiar conditions may call for a peculiarly high degree of specialisation in order that efficiency may be attained.[2] In so far as the number of businesses within each grade is too large, the result may be reflected in the low profits of the smaller units rather than in any change in the price of the commodity marketed. The complaint that the "spread" between producers' and consumers' prices is caused by the existence of an excessive number of middlemen is therefore frequently without foundation.

(*b*) *The Cost of the Marketing Functions.*—The various functions of marketing are links in a chain, the weakness of any one of which weakens the whole chain. If any one marketing function is inefficient or wasteful the cost of marketing as a whole is unnecessarily high, and there is a possibility of its reduction. We must therefore examine each function in turn, with a view to discovering how its cost can be reduced.

(1) The function of collecting and assembling farm products is one where the law of increasing returns acts strongly. Large farmers enjoy an advantage in these matters over small; possibly this is the only respect in which the size of the farm affects marketing costs. Very large scale producers may be able to dispense altogether with the services of assembling agencies.[3] The cost of collection and assembling will be lower when the agriculture of any district is specialised than when it is diversified, and the adoption

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[1] Weld, *op. cit.*, p. 21; Gray, *op. cit.*, p. 468; Macklin, *op. cit.*, pp. 14, 335.

[2] Weld, *op. cit.*, pp. 179–81; Boyle, *op. cit.*, p. 75.

[3] *Prelim. Report*, p. 5.

of standard grades and uniform packaging may also help to cheapen these operations.[1] If the business of a locality is divided among a large number of small dealers, overhead expenses will be unnecessarily high and many of the costs of collection will be duplicated. There is therefore a *prima facie* case for the concentration of these functions in the hands of large organisations working over a wide area. The danger of too great a concentration of this kind is that the farmers may find themselves faced with a monopolist purchaser. The best method of averting this danger is by the formation of co-operative sale societies by the farmers themselves. This type of society is usually more difficult to organise than societies for purchase, because selling as a rule is more difficult than buying. They therefore usually appear at a late stage in the co-operative development of any country. These societies are analogous to the selling associations in manufacturing industry, which also emerge only in a comparatively advanced stage of industrial progress. Co-operative selling has been stated to be "the goal rather than the starting-point of the co-operative movement."[2] In the absence of such co-operative organisation monopolist tendencies may either be checked by general anti-trust legislation or controlled by means of governmental supervision and regulation. The latter course may frequently prove the more satisfactory, because the monopoly, when under proper control, may be justified by the general economy of its operations.[3]

(2) The transport of agricultural produce usually involves

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[1] *Agricultural Tribunal of Investigation*, pp. 18–19; *Report of Business Men's Commission on American Agriculture*, pp. 264–5.

[2] Pratt, *The Transition in Agriculture*, p. 195. On the close analogy between modern industrial large scale organisation and the co-operative movement in agriculture see *Agricultural Tribunal of Investigation*, p. 105; *Report on Agricultural Credit*, p. 8; Nourse, *op. cit.*, pp. 265–6, 314. The peculiar difficulties of co-operative sale and an account of the attempts that have been made to surmount them in many countries will be found in C.E.I. 36, pp. 628–647.

[3] Weld, *op. cit.*, pp. 38–40; Boyle, *op. cit.*, p. 223; Taylor, *op. cit.*, p. 430; Gray, *op. cit.*, pp. 470–1; C.E.I. 36, p. 628; *Agricultural Tribunal of Investigation*, p. 136; *Final Report of Linlithgow Committee*, p. 30.

three journeys: first, from the farm to the railroad or shipping point; second, the railway or shipping journey; and thirdly, from the terminal point to the urban consignee. The reduction of the cost of the first journey is generally a matter for the farmers themselves; it involves the most economical methods of haulage, and depends upon such matters as the utilisation of farm horses for road transport and the relative merits of horse-drawn and motor vehicles. The question of how far the farmer helps to pay for the roads also arises in this connection. The third journey is usually in the hands of the wholesale or retail dealers, and reductions in its cost form part of the general efficiency of these agencies. It is the second journey—namely, the long haul by rail or sea—that is generally referred to when the transport of agricultural produce is being discussed.[1]

The fixing of rail and shipping charges is usually outside the farmer's own control. Rates are fixed either by the transport agencies themselves or by some public rate-fixing tribunal. Agricultural interests, especially when the farmers are well organised, may be powerful enough to influence the rates fixed by either of these agencies, but such influence is indirect. Assuming that a certain schedule of rates has been fixed, the question is how far the costs of transportation can be reduced by farmers or their organisations. One obvious method is by the consignment of large lots at a time. If large and regular consignments can be guaranteed, the cost of freight per unit will be considerably reduced; small and irregular consignments are more expensive to handle. The possibility of securing loads of sufficient size and of sufficient regularity depends largely on the size of the business of the consignors and consignees, and is therefore bound up with the organisation of the collecting agencies in the country and the distributing agencies in the city. Large scale collecting agents, whether private or co-operative, will be in a position to secure cheaper rates than small, disorganised groups of consignors, and the possibility of reduction of rates is still further increased if the consignments are directed to large wholesale distributors who are willing to receive large lots at regular intervals. The cost of transport is also reduced by every operation which reduces the bulk of the commodity in relation to its value, as, for example, standardising and processing. Suitable packaging may render the commodity easy to handle and may economise space in the transporting vehicle. The modern advance of motor transport has made it possible for farmers, especially in small countries, to develop methods of conveying their produce by road, and railway rates may be lowered to meet this competition. All these methods of cheapening transport are within the power of organised farmers.[1]

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[1] Boyle, *op. cit.*, p. 107; Macklin, *op. cit.*, pp. 119–21.

(3) The third function of marketing is wholesale distribution. In this function the economies of large scale organisation are obvious. The costs of transportation, of loading, unloading, handling, storing and delivering commodities are all lower when operations are conducted on a large scale. Large dealers enjoy the advantage of relatively low overhead charges and can afford to work at a small profit on the turnover. All these economies are capable of attainment by consumers' co-operative societies provided they are organised on a sufficiently large scale.[2]

(4) The fourth marketing function, namely, retail distribution, is the most costly, and is principally responsible for the "spread" between consumer's and producer's prices.[3] It is frequently stated that there are too many small shops. While this may be so, it does not follow that such a multiplicity of retailing units is the cause of the high cost of retailing. It is possibly a more legitimate inference that

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[1] Weld, *op. cit.*, p. 235 ; Macklin, *op. cit.*, pp. 122–3 ; Taylor, *op. cit.*, p. 423 ; Boyle, *op. cit.*, pp. 106–131 ; Nourse, *op. cit.*, p. 567 ; *Final Report of Linlithgow Committee*, p. 19.

[2] Weld, *op. cit.*, p. 185 ; Macklin, *op. cit.*, pp. 224–5.

[3] Weld, *op. cit.*, p. 223 ; Macklin, *op. cit.*, p. 224 ; *Final Report of Linlithgow Committee*, p. 26 ; *Irish Free State Report of Tribunal on Prices*, 1927.

the excessive number of shops is reflected in the miserable standard of living of their owners rather than in the high price of what they sell. It is probably nearer the truth to say that the high cost of retailing is the result of disorderly marketing on the part of the consuming public, who demand all sorts of unreasonable and expensive services from shop-keepers for which they must be prepared to pay. As long as the public continue to refuse to discriminate between the more efficient and the less efficient retail shops the latter will survive and the former will be prevented from realising their maximum economies. The cost of retailing could likewise be reduced by the organisation of consumers' co-operative stores. At all events the remedy for the high cost of retailing lies principally in the hands of the consumers; the only contribution the farmer can make is, by means of standardisation of output, grading, and suitable packaging, to minimise the necessity of inspection before purchase.[1]

(5) The fifth function of marketing is the bearing of risks. Certain risks in agriculture arising from physical causes, such as droughts, floods, plant and animal diseases, have already been discussed. These risks are largely uncontrollable, although they may be reduced by means of advances in agricultural science and their incidence lightened by schemes of crop and live stock insurance. There are other risks, however, more amenable to human control. These are the risks of marketing. In the first place there is the risk of the farmer incurring bad debts through the dishonesty or insolvency of persons with whom he deals. Obviously this risk is reduced in proportion to the standing and resources of the dealers to whom he sells his produce, and may be almost entirely eliminated by the formation of co-operative selling agencies. Other marketing risks are those of losses in

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[1] Weld, *op. cit.*, pp. 427–8, 437–44; Macklin, *op. cit.*, p. 9; Boyle, *op. cit.*, pp. 25–42; Gray, *op. cit.*, pp. 449–50, 466, 472; *Final Report of Linlithgow Committee*, p. 22; Boyle, *Agricultural Economics*, p. 131. The prices charged in private shops and in consumers' co-operative stores are compared in a memorandum, C.E.I. 11, prepared for the International Economic Conference.

quantity, of deterioration in quality, and of fire, theft and accidents during transport. Most of these risks can be covered by insurance.[1]

The most characteristic and important marketing risks are those which result from the great fluctuations which take place in the price of agricultural commodities. These fluctuations are to be distinguished from those which arise from monetary influences. They are the result in the main of the conjunction of an inelastic demand and a fluctuating supply, and of the great variations in supply owing to alterations in the area under cultivation, to seasonal and weather conditions, to irregular production throughout the year, and to conditions in the marketing system itself. The existence of a relatively small surplus may have the effect of depressing prices inordinately. The prevention or disposal of such surpluses is therefore a matter of great importance.[2]

The methods adopted to minimise the surplus problem constitute what is known as "orderly marketing," which is defined by Boyle as "price stabilisation through control of the flow of the product to market." [3] This control may take two forms: either the prevention of any surplus coming into existence or the disposal of any surplus that does actually occur. The former is by far the most important branch of an orderly marketing programme. The regulation of the amount of the various crops produced constitutes, according to Taylor, ninety per cent. of the problem of orderly marketing, which is really, therefore, a production problem.[4] The solution of this problem depends on the development of business forecasting, on the collection of international agricultural statistics, on the widespread dissemination of correct information to farmers, and on the organisation of independent producers into co-operative societies which can regulate the production of large areas. Many of these

[1] *Prelim. Report*, p. 11.

[2] *Report of Committee on Stabilisation of Agricultural Prices*, p. 21.

[3] *Op. cit.*, p. 212.

[4] *Op. cit.*, p. 462; Boyle, *op. cit.*, pp. 402–3; C.E.I. 14, p. 18.

matters, for example the collection and dissemination of market statistics and forecasts, necessitate action on the part of some public authority and will be discussed in the following chapter; but the last matter mentioned—namely, the formation of co-operative societies—is within the power of the farmers themselves.[1] The complete control of production is frequently impossible. The market forecasts may prove incorrect; physical causes may produce unexpectedly abundant yields; or a large volume of production may take place in areas outside the control of the organised farmers. With the development of international trade and the opening up of new areas the possibility of any organisation—short of a world-wide one—controlling the production of any commodity is becoming more and more remote. Indeed, as was shown by the Stevenson restriction scheme for rubber and the Brazilian coffee valorisation experiment, one result of such attempts at control is to stimulate production in the uncontrolled areas. Even if the whole area of possible cultivation were controlled by a single organisation, the regulation of the amount produced would be impossible owing to the influence of weather conditions; in an exceptionally good year a reduced area might yield an increased output. Monopolistic control of production is unattainable in agriculture. It is necessary, therefore, to make arrangements, not only for preventing a surplus, but also for dealing with any surplus that does in fact come into existence.

Once a surplus has actually arisen, it must be kept off the market so as to prevent a glut and a consequent collapse of prices. Four methods can be suggested for attaining this object: first, the destruction of part of the crop; second, the utilisation of the surplus in some industrial use; third, its diversion to some other market where supplies are short; and fourth, storage until demand again becomes effective. The last method is of particular value when production is seasonal. Whichever of these methods be adopted some organisation is necessary. What is needed is to prevent the farmer's produce being thrown on the market chaotically by innumerable small farmers none of whom can afford to postpone his sale. "The remedies in the main fall under the general head of 'collective' or 'centralised' trading. Centralised organisations might do what the existing machinery cannot do, namely, regulate the flow of agricultural produce to market so as to minimise the possibility of markets becoming congested." [1]

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[1] Boyle, *op. cit.*, p. 404; Taylor, *op. cit.*, pp. 462–74.

(*c*) *The Width of the Market.*—Every function of marketing is performed more efficiently on a large than on a small scale. The possibility of a large scale organisation depends to a great extent on the width of the market. If the market is narrow, large scale organisation may not be justified on account of the small volume of business, and many economies in the various functions may have to be forgone. Everything that tends, therefore, to widen the market will aid in the attainment of the most efficient marketing arrangements. Such influences may be classified according as they tend to widen the market in space or in time.

The conditions which make possible a market wide in space are laid down by Marshall as follows: first, the articles marketed must be in universal demand; secondly, they must be portable, in the sense that they must be somewhat durable and that their value must be considerable in proportion to their bulk; and thirdly, they must be capable of being easily and exactly described.[2] Everything that tends to make commodities conform to these conditions will increase the width of their market with the possibility of consequent economies.

As regards the first condition, the existence of a universal demand, agricultural produce is in a satisfactory position. The demand for food which forms the greater part of total agricultural production is, and must remain, universal; and the demand for the commoner raw materials of industrial production, while less universal than that for food, is extremely widespread.

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[1] *Report of Committee on Stabilisation of Agricultural Prices*, p. 51; Macklin, *op. cit.*, pp. 274–80; Ashby in *Journal of the Royal Agricultural Society*, vol. 86, pp. 102–14; Boyle, *op. cit.*, p. 165; Prewitt, *Marketing of Milk*.

[2] *Principles*, p. 326.

The second condition of a wide market is portability, which depends in its turn on durability and the relation between bulk and value. The durability of farm produce may be increased by processing, which converts the produce from a more perishable to a less perishable form. Examples of processing are the preservation of fruit and vegetables by tinning and bottling, and the conversion of milk into butter, of fruit into jam, grapes into wine, olives into oil, and of live stock into refrigerated meat.[1] Processing is usually a manufacturing rather than an agricultural operation whether it is conducted in a factory or on the farm itself. Processing also reduces the bulk in relation to the value of the goods, and thus provides the second condition upon which portability depends. The economies which arise from processing are naturally greater the earlier the operation is performed, and are maximised when they are carried out by the farmers themselves. The reduction of the bulk in relation to the value may be further aided by the production of goods of high quality, by suitable packing, and by other economies in transportation.[2]

The third condition of a wide market, namely, that the goods may be easily and exactly described, may be attained by grading and standardisation. These two operations are defined by Taylor as follows: "Grading as a marketing activity consists of classifying or sorting a commodity into groups, no two of which overlap, and in each of which the commodity is of practically uniform kind, size, or quality; but a certain range and tolerance are allowed in each grade. Such grading, to be of maximum value, is accomplished through the use of recognised standards. Standardisation establishes the permanency of the grades, and does not allow them to change with the market or from year to year. Without such established and uniform standards we have no good basis for buying or selling, no common language for both buyer and seller, and no standard of quality upon which values may be fixed."[1] The International Institute of Agriculture defines these processes as follows: "It is necessary to form by selection and sorting groups which are uniform in kind, in quality and in size, and this is what is called grading. When a further step is made and the characteristics of each group are laid down, the grades are said to be standardised."[2] Grading and standardisation of produce are the great hope of economy in marketing at the present day; they are "one of the most important functions in the marketing of agricultural produce."[3] As Boyle points out, grading is always done by somebody, and the problem is to have it done as economically and cheaply as possible.[4] It is obvious that the earlier it is done the better. It is better that it should be done by the retailer than by the consumer, better still by the wholesaler, better still by the collecting and assembling agencies, and best of all by the farmers themselves. Grading and standardisation depend upon the production of goods of a high and uniform quality, and the processes must really begin on the farm if their maximum benefits are to be realised.[5] Co-operative organisation can do much in this respect, and as we shall see later the State frequently insists on certain standards and grades. Of course there are certain articles which can never be standardised or graded as thoroughly as others; live stock, for example, present peculiar difficulties; and there is scarcely any article of agricultural production which can be standardised to the same extent as manufactured goods. But in regard to the commodities in which they are possible, grading and standardisation may be productive of innumerable marketing economies. There is scarcely a single function which is not more cheaply performed when the commodities are graded and standardised ; the expenses of transport, storage and handling are reduced, the raising of loans on the security of goods is facilitated and waste is avoided ; but the greatest advantage of all is the increase in the size of the market.[1]

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[1] Weld, *op. cit.*, pp. 174–5; Taylor, *op. cit.*, pp. 420–1; *Prelim. Report*, p. 5.

[2] Taylor, *op. cit.*, pp. 418–9, 423; Weld, *op. cit.*, pp. 186, 382; C.E.I. 36, p. 614.

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[1] *Op. cit.*, p. 417, and see Boyle, *op. cit.*, p. 187.

[2] *Prelim. Report*, p. 6.

[3] *Ibid.*, p. 6.

[4] *Op. cit.*, pp. 187–8.

[5] Carver, *Elements of Rural Economics*, p. 198; Boyle, *Efficient Marketing of Agricultural Products*, p. 418; Taylor, *op. cit.*, pp. 447–8.

The extension of the market in respect of time is of importance in considering orderly marketing. Surplus quantities cannot be disposed of if immediate sale is necessary either by reason of perishability or of any other cause. The perishability of goods may be overcome by processing, which thus tends to widen their market in time as well as in space. The most important method of widening the market in point of time for non-perishable commodities is by storage, often in conditions of artificial heat or cold.[2] The question of storage is intimately connected with that of credit, because farmers frequently cannot afford to withhold their goods from sale, and the provision of these two services is one of the central functions of orderly marketing agencies whether private, co-operative or public.[3] The disposal of surplus stocks arising from seasonal or other variations in production or in demand can never be dealt with satisfactorily unless adequate storage and credit facilities are available.

The market is also widened by means of " future trading," which depends in its turn upon grading and standardisation of farm products.[4] The merits and demerits of this kind of dealing have been much canvassed, but the best opinion is that it has a very steadying effect on prices, and that it thus reduces the business risks of agriculture and cheapens one of the marketing functions. Weld points out that future trading has three advantages: "first, it largely makes possible the shifting of risk from the actual merchandisers of commodities to a body of professional risk-takers; second, it aids in steadying the price level and in regulating the rate at which the year's crop is consumed; and third, it aids in adjusting prices between different markets and hence in regulating the flow of commodities from producing to consuming regions."[1] Boyle states that "future trading reduces the risks of business to a minimum and thereby the charges for conducting the business become greatly diminished";[2] and Rew concludes that "the system tends to steady the course of prices and to prevent violent fluctuations."[3]

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[1] *Prelim. Report*, p. 7 ; Boyle, *Efficient Marketing of Agricultural Products*, p. 190 ; *Final Report of Linlithgow Committee*, p. 13 ; Taylor, *op. cit.*, p. 418.

[2] Taylor, *op. cit.*, p. 424 ; Weld, *op. cit.*, pp. 59–60, 142 *sq.* ; Boyle, *op. cit.*, pp. 134 *sq.* ; *Prelim. Report*, p. 6.

[3] *Report on Agricultural Credit*, p. 20.

[4] Boyle, *op. cit.*, p. 190.

The discussion on marketing costs has led us to the following general conclusions: first, that the essential marketing functions must be performed by somebody, and that the important question is not how they can be eliminated but how their cost can be minimised; second, that large scale organisations, whether private or co-operative, are *prima facie* the most efficient and therefore the cheapest type of marketing agency; and third, that the possibility of such large scale organisations realising their maximum efficiency depends upon the width of the market in space and in time. The question may be asked whether the marketing process would not be further economised if several of the functions were performed by one agency instead of by separate ones, in other words, whether specialisation should not be supplemented by integration. Great importance was attached by the International Economic Conference to the possibility of linking up producer and consumer in one great distributive organisation. The advantages of integration are obvious, but the process has not advanced very far in agricultural marketing. The attempts that have been made, on the one hand, by producers' societies to market their products direct to the urban consumers, and, on the other hand, by the consumers' societies to undertake their own agricultural production, have not proved conspicuously successful. The best hope for the future probably lies in the direction of establishing direct relations between producers' and consumers' societies. While a certain amount has been accomplished in this respect, the movement is still in its infancy. Conflicts of interest between town and country, to say nothing of those between different nations, have rendered direct relations between the two classes of society difficult. The present situation is aptly summarised in the Year Book of Agricultural Co-operation in the British Empire as follows : " nationally, the problem of the relations between the two sides of the co-operative movement is being worked out tentatively on various lines ; internationally it has got little further than the stage of discussion."[1] It must be remembered that none of the essential functions of marketing could be eliminated even by the most complete integration ; the number of agencies would be reduced but the number of functions to be performed would remain unchanged.

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[1] *Op. cit.*, pp. 336–7.

[2] *Op. cit.*, p. 197, and see pp. 206–7.

[3] *Op. cit.*, p. 193, and see Gray, *op. cit.*, pp. 487–93; *Report of Business Men's Commission on American Agriculture*, pp. 115–203; Boyle, *Agricultural Economics*, pp. 19–20, 271–2, 352.

We have insisted repeatedly that marketing is part of the productive process, and that marketing costs therefore form part of the costs of production, the reduction of which will increase the farmer's profit. The above analysis of the functions of marketing has disclosed the fact that no hard and fast line divides the various stages of the productive process. Indeed every stage in the process is intimately connected with every other stage. In particular, the costs of marketing depend greatly on the manner in which the farmer has done his part of the productive process. We have seen that grading and standardisation assist in the attainment of practically every marketing economy, and that these in their turn to be effective must be begun "not only on the farm, but on the day the seed is ordered."[1] Economies in transportation depend largely on how the goods are packed and otherwise prepared for transit and on the relation between bulk and value, or, in other words, on the quality of the produce. These are conditions that can be realised only if the operations on the farm itself have been efficiently conducted. Again, the problem of orderly marketing turns far more on the prevention than on the disposal of surplus, and this matter again is largely within the control of farmers themselves. In other words, efficient marketing depends on efficient cultivation. It is impossible to disagree with the following excellent passage from Boyle: "It must be kept in mind that marketing is primarily a production problem. . . . This is but another way of saying that the basic problem of marketing is to produce the quantity and quality the consumer wants. A marketing agency, co-operative or otherwise, which ignores this, would be like a manufacturing concern with a separate and distinct sales department, the manufacturing department of the business turning out products, helter skelter, of all sorts of qualities, in all sorts of quantities, the sales department vainly trying to find buyers for all the products all the time. Such a sales department would fail. Selling and producing must be co-ordinated to meet consumer's demand."[2]

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[1] *Year Book*, 1928, p. 142. This whole problem forms the subject of the *Preliminary Report on the Sale of Agricultural Produce*, prepared by the *International Institute of Agriculture* in 1925, and of the volume entitled *Producers and Consumers*, by Miss M. Digby, edited by the Horace Plunkett Foundation, 1928. See also *Year Book of Agricultural Co-operation in the British Empire*, 1925, pp. 186–204 ; *Final Report of International Economic Conference*, p. 49 ; C.E.I. 36, pp. 614, 647 ; C.E.I. 14, p. 26 ; C.E.I. 43, p. 18 ; *Agricultural Economics in the Empire*, p. 19 ; Weld, *op. cit.*, pp. 20, 449 ; Macklin, *op. cit.*, pp. 263–6.

The passage just quoted summarises the whole matter admirably. Marketing is a part of the productive process, but a comparatively unimportant part compared with the other part that precedes it. No doubt great improvements in marketing methods are possible and great reductions in marketing costs attainable. There is a danger, however, that the emphasis that is laid on this branch of the farmer's business in present-day discussions on agricultural economics may obscure the importance of economy and efficiency on the farm itself. When unwise, disorderly, or inefficient production has taken place on the farm, the most perfect marketing organisation can do no more than save the farmers from some of the consequences of their folly ; while, as long as consumers continue capricious, unreasonable and disorderly in their demands, the marketing system can do little to save them from the effects of their unwisdom. If production and consumption were less disorderly, marketing would tend to become more orderly.

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[1] Taylor, *op. cit.*, p. 448.

[2] *Op. cit.*, p. 216, and see C.E.I. 14, p. 18; *Report of Business Men's Commission on American Agriculture*, pp. 195–6.

Finally, it must be emphasised that every stage of production, from the sowing of the seed to the delivery at the consumer's door, is a link in a continuous chain. The attainment of the minimum cost of production depends upon the realisation of the maximum efficiency at every point.

CHAPTER III

THE STATE AND AGRICULTURE

Section 1. *Introductory*

THE previous chapter dealt with the manner in which the profits of agricultural production are determined assuming that farmers pursue their own self-interest, without any interference on the part of the public authorities either by way of assistance or of impediment. In these circumstances, the only method by which profits can be increased is by the reduction of costs ; the price of farm produce is determined by causes outside the farmer's own control. We must next discuss the ways in which the prosperity of the agricultural industry may be assisted by action on the part of the State, which has the power not only to aid the farmer in reducing his costs, but also to raise the selling price of his produce. The State can therefore increase the prosperity of agriculture in two directions : by measures designed to increase the efficiency of the industry itself or by measures designed to raise the price of farm produce. The State's agricultural policy may include both types of measure ; it may aim at the same time at efficiency and at protection.[1]

State action is not the only force outside the farmer's own control that influences his costs of production and the price of his products. The general progress of his neighbourhood may influence his fortunes materially. Marshall points out that : " Every farmer is aided by the presence of neighbours whether agriculturists or townspeople. Even if most of them are engaged like himself in agriculture, they gradually supply him with good roads and other means of communication; they give him a market in which he can buy at reasonable terms what he wants; they surround him with knowledge; medical aid, instruction and amusement are brought to his door; his mind becomes wider and his efficiency is in many ways increased. And if the neighbouring town expands into a large industrial centre his gain is much greater. All his produce is worth more; some things which he used to throw away fetch a good price. He finds new openings in dairy farming and market gardening, and with a larger range of produce he makes use of rotations that keep his land always active without denuding it of any of the elements that are necessary for its fertility."[1] Agriculture may enjoy many of the external economies of production, and the price of many of the farmer's raw materials and other expenses of production may be reduced as the result of the industrial development of the neighbourhood or the nation. The progress of both German and American farming in modern times was accelerated by the industrial advances that took place in the two countries.[2] The influence of industrial expansion on agricultural production gives rise to discussions on the problem of the relative rates of growth of population and food supply and of the possibility of delaying the long period or secular tendency towards diminishing returns. These matters, however, as we have already indicated, are relevant to the science of population rather than to that of agricultural economics, and they will not therefore be discussed in the present chapter. Moreover, whatever effects the growth of industry may have on the level of agricultural costs and prices is unintentional and accidental. The forces with which we are concerned are those which are deliberately designed to influence those costs and prices. In the previous chapter we indicated the forces of this kind that arise from the decisions of individual or organised farmers; in the present we shall indicate those which arise from the decisions of public authorities. The transition is from the internal to the external organisation of the industry.

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[1] *Report of Agricultural Policy Sub-Committee of Reconstruction Committee*, pp. 88–9.

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[1] *Principles*, p. 165.

[2] Taussig, *International Trade*, p. 84; Middleton, *Report on the Recent Development of German Agriculture*, Cd. 8305, p. 34; Nourse, *op. cit.*, pp. 265–6; Nicholson, *Principles of Political Economy*, i. 172.

These two types of decisions act and react upon each other, and cannot be segregated in absolutely watertight compartments. Obviously the decisions of the Government regarding agricultural policy are to a large extent capable of being put into practice only with the willing co-operation of the producers themselves. In so far as such policy consists of education and the encouragement of improved methods, it is simply an attempt to influence the individual farmer in making his own decisions. Conversely, Government policy may be partially dictated by the farmers themselves provided they are sufficiently organised to make their wishes heard. In Germany, for example, the farmers, by means of their voluntarily organised Chambers of Agriculture, have exercised a preponderating influence on the formation of State agricultural policy.[1]

It will be generally agreed at the present day, even by the most convinced individualist, that the State is justified in interfering with private enterprise with the object of increasing the national dividend. In order that the national dividend may be maximised it is necessary that every industry should be organised to the point of its greatest efficiency. In so far as particular industries are unable to increase their efficiency to the maximum by their own unaided efforts, it is the right and the duty of the State to come to their assistance in the national interest. The measure of State aid therefore depends upon the degree of self-help of which an industry is capable; if any branch of national production can be shown to be in a position where it is peculiarly helpless to improve by its own efforts its claim for public assistance is unanswerable. An example of such an industry is to be found in agriculture.

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[1] Cahill, *Report on Agricultural Credit*, etc., Cd. 6626, pp. 272–3; Schindler in *The Scottish Journal of Agriculture*, x. 144.

The peculiar feature which renders farming more helpless than other branches of industry is its persistent small scale organisation. While other industries tend to become concentrated in units of ever-expanding size, agriculture remains scattered, individualistic and small scale. As has already been explained, many of these disadvantages are partially surmounted by the adoption of co-operative methods, but, even when full allowance has been made for this development, it remains true that farmers are small scale producers compared with manufacturers. Each producer pursues his solitary path, far removed from the sources of new information regarding inventions and markets. He is in a far less favourable position than the producer in urban industries to hear of improved production processes, new labour-saving devices, scientific discoveries or fresh marketing possibilities. Moreover, the farmer can never hope to attain even in the smallest degree any control of the market ; he is as far removed as possible from a monopolist ; and the possibility of increasing the demand for what he has to sell is extremely limited. In the highly organised industrial world of the twentieth century agriculture is, comparatively speaking, an infant industry.[1]

In view of these considerations it is not surprising that practically every modern country has adopted a definite agricultural policy. It has been almost universally decided by the framers of State policy that this great industry cannot be allowed to shift for itself but must receive an unusual measure of public support and guidance. Germany has led the world in this respect, followed by Denmark and France ; the United States, after a long period of industrial encouragement during which the development of farming was " taken for granted," have shown the rest of the world an example in the study of rural problems and policies; while England, alone among the great nations, with the exception of a feverish attempt to encourage food production during the War, has displayed an attitude of apparent indifference to the interests of her principal industry.[1]

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[1] *Agricultural Tribunal of Investigation*, p. 100 ; Gray, *op. cit.*, p. 228 ; Ely and Moorhouse, *op. cit.*, pp. 16 *sq.* ; *Report of Business Men's Commission on American Agriculture*, p. 190.

In studying the agricultural policies of different countries it is important to remember that they are frequently dictated by aims other than the prosperity of the farming industry itself. If the latter were the only object to be attained, it would usually be best achieved by leaving farmers alone to pursue the course which appeared to them to offer the greatest possibility of profit, without regard to the type or method of cultivation. In this negative sense, England may be said to have had an agricultural policy since the Repeal of the Corn Laws. Such a policy of *laissez-faire* may be and is quite frequently accompanied by legislative measures designed to increase the efficiency of production in the branches of farming which farmers themselves choose to adopt, just as a free trade industrial policy may be quite consistently accompanied by measures designed to increase the efficiency of manufacturers by assisting them to obtain supplies of skilled labour and cheap capital. Such a policy stands in clear-cut contrast to the protective policies which aim, not at increasing the efficiency of production in the lines found most profitable by private enterprise, but rather at encouraging alternative branches of production. The former type of policy is of universal application and its adoption can never meet with disapproval, whereas the latter is invariably designed to achieve some object other than the maximum profitableness of the agricultural industry, although, of course, the farming class may reap some incidental advantage. The commonest objects thus aimed at are the production of a large amount of food in the interests of national self-sufficiency, especially in war time, and the maintenance of a large rural population for military, hygienic, social, or political purposes. Policies designed to attain either of these two objects aim at increasing the size rather than the efficiency of the agricultural industry. Minor motives that may lead to a diversion of production from more profitable to less profitable directions are the suppression of ethically injurious crops, such as opium, or the prevention of frauds on the revenue, as, for example, the prohibition of the growth of tobacco or other dutiable plants.[1]

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[1] *Report of Agricultural Policy Sub-Committee of Reconstruction Committee*; *Agricultural Tribunal of Investigation*, pp. 12–13; Ernle, *op. cit.*, pp. 414A, 418D-H; Orwin, *Journal of Royal Agricultural Society*, vol. 83, p. 14; *Report of Business Men's Commission on American Agriculture*, p. 7; Nourse, *op. cit.*, pp. 7 *sq.*; Douglas, "The Policy of the Agriculture Act," in *Transactions of Agricultural and Highland Society*, 1921, p. 3.

It is important to realise that in all these cases there may be, and frequently is, an antagonism between the interests of the farmers and those of the nation. Naturally, the latter must prevail. It is for the State, as representing the public, to decide which policy in regard to agriculture is to be adopted, and the public is not entitled to complain if some of the consequences of that policy are unpleasant. If it is decided to leave the farmers alone to work out their own salvation, with no measure of State assistance beyond that designed to maximise the efficiency of whatever branch of production they choose to undertake, no complaint can legitimately be made if the farmers choose to cultivate extensively, thus reducing the area under the plough and causing rural unemployment; if, on the other hand, it is decided to divert production from those branches which the farmer finds most profitable, in the interest of national defence or some other public object, then there must be no complaint if food is found to be dear.[2]

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[1] *Report of Agricultural Policy Sub-Committee of Reconstruction Committee*, p. 35; *Agricultural Tribunal of Investigation*, pp. 100, 143–4; Ashby, "Standards of Production on Scottish Farms," in *Scottish Journal of Agriculture*, vi. 401; *Report of Liberal Industrial Inquiry*, p. 326.

[2] Taylor, *op. cit.*, p. 85; Ernle, *op. cit.*, p. 418, I; Orwin in *Journal of Royal Agricultural Society*, vol. 83, pp. 4–14.

In many instances measures aimed at increasing the size of the industry are accompanied by other measures aimed at increasing its efficiency. Germany is the classical instance of such a dual policy being pursued with admirable results. The efficiency policy, however, is found in countries that pursue no protective policy, as, for example, England, Ireland and Denmark. It is the common feature of State assistance to agriculture to-day. We shall therefore discuss it first, and shall refer later to the effects of the less general protective policies. In considering the methods by which efficiency may be increased by means of public assistance we shall discuss each element of the farmer's costs of production in the same order as in the previous chapter, and show that there is scarcely one of them that cannot be materially reduced by means of State action. Needless to say, the adoption of any particular method is a matter of policy for the government of each country, and must be decided on in the light of the peculiar local requirements. Obviously, different degrees and methods of assistance are called for according as the country is relatively backward or advanced, densely or thinly populated, or producing for home or export markets. All that we can do is to indicate the directions in which State action may increase private efficiency; the decision to take or not to take such action and the choice of the machinery by which it shall be administered is a matter of policy for every separate nation.

Even when the State has done everything in its power, the range of its possible activities to reduce costs of production is comparatively limited. The very individualistic, scattered, unorganised nature of the farming industry, which is its chief title to special assistance, is at the same time the cause of rendering the potentialities of such assistance rather narrow. Agriculture is essentially an operation carried on by scattered farmers far removed from the direct control or supervision of the State or its officers, who can, at the most, help the farmer to help himself. No amount of

State assistance will increase the efficiency of agricultural production if farmers do not respond to the efforts which are being made on their behalf. True progress must rest on willing co-operation between the individual farmer and the Government's agricultural administration. The farmer is in many cases powerless to improve his position without the aid of the State; the State is absolutely unable to improve his position without his own assistance.[1]

The measures that are taken to increase efficiency of production are capable of being classified in accordance with the type of cost which they are designed to reduce. Roughly, they may be said to fall into three main divisions: those aimed at improving the science, the craft, and the business of farming. The first of these divisions includes all measures designed to overcome or to delay the operation of the physical law of diminishing returns, the second, those designed to maximise the efficiency of cultivation or of production in the narrow sense, and the third those designed to maximise the efficiency of marketing.[2]

Section 2. *State Assistance to the Science of Agriculture*

The scientific problems of agriculture can be solved only by means of scientific research. The object of such research is to make two blades of grass grow where one grew before, either by delaying the action of the physical law of diminishing returns or by eliminating or reducing some of the physical risks of production. The action of the law of diminishing returns may be postponed by the application of artificial fertilizers, the study of plant breeding, and experiments in rotations and other matters connected with the cultivation of the soil. The physical risks of production may be reduced by progress in the study of plant and animal diseases.

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[1] *Report of Business Men's Commission on American Agriculture*, pp. 12, 17, 30; *Final Report of International Economic Conference*, p. 47; *Irish Free State Commission on Agriculture*, p. 27.

[2] The measures designed to increase efficiency are enumerated and classified in *Agricultural Tribunal of Investigation*, p. 101; C.E.I. 36, pp. 19–20; Gray, *op. cit.*, p. 228; *Year Book of Agricultural Co-operation in the British Empire*, 1926, p. 18; Ely and Moorhouse, *op. cit.*, pp. 26 *sq.* No measure in any of these enumerations fails to fit into the above suggested classification.

Research of this kind is obviously beyond the power of individual farmers. A great deal of laboratory work is necessary which cannot be undertaken except in special institutions with a highly qualified staff. In some countries, of which Germany is a notable example, scientific research of the most advanced kind is carried on by societies formed by farmers, but such cases are exceptional. In so far as such institutions are not provided by educational bodies such as universities or by the benevolence of private individuals, they should certainly be provided by the State; and have in fact been so provided in the United States and many other countries. The Secretary of Agriculture of the United States has said that the " basic work of the Department is in the field of research. Upon the results of this work its other activities are built For the first forty years its chief business was in this field." In spite of the great amount of research that has already taken place at the public expense in the United States, still further developments in the same direction have been recommended by the Business Men's Commission on Agriculture; and the Agricultural Tribunal of Investigation has recommended that the same service should be extended in England, on the ground that " research is the basis of progress and agricultural education rests peculiarly on research."[1]

Needless to say, the pursuit of scientific knowledge is practically useless unless the results obtained are brought to the knowledge of the actual cultivators of the soil. The dissemination of such results forms part of the general functions of the system of agricultural education which will be considered later. It is important, however, to emphasise at this point that, whether the research is being conducted at private or public expense, it is the duty of the State to spread the knowledge of the results among the farming classes, by whom they can be turned to practical advantage. Farmers, owing to the scattered nature of their industry and their natural conservatism, are less in the habit of studying improved methods for themselves than workers in other branches of industry ; and it is necessary therefore that the new knowledge which is available should be carried to their own doors. The research in the laboratory must therefore be supplemented by the service of itinerant instructors, who under various names, *consulents*, *agronomes*, *wanderlehrer* and county instructors, have played such a large part in the agricultural advance of many European countries.[1]

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[1] *Report of Business Men's Commission on American Agriculture*, p. 40; *Agricultural Tribunal of Investigation*, p. 92; *Irish Free State Commission on Agriculture*, p. 63; Schindler in *Scottish Journal of Agriculture*, x. 145; *Report of Imperial Agricultural Research Conference*, 1927, p. 57.

Mere counsel may not prove sufficient to ensure that the agricultural industry shall derive the utmost benefit from scientific experiments designed to reduce the physical risks of production. In many cases compulsory measures are justified to ensure that the negligence of one farmer in not adopting new methods shall not inflict injury on his neighbours. Obvious examples of such measures are the compulsory spraying of potatoes, compulsory dipping of sheep, the notification of outbreaks of infectious diseases, such as foot and mouth disease, and the control of noxious weeds and vermin. The compulsory use of improved breeds of live stock by means of eliminating inferior breeds is also worth mentioning in this connection, although it will be more properly treated in connection with increasing the efficiency of the craft of farming. The incidence of the physical risks of production can be lightened, even if the evils risked cannot be prevented, by means of co-operative crop and live stock insurance schemes, which may incidentally aid scientific progress by means of the information and statistics that they can collect. The organisation of such co-operative insurance schemes is a proper function for the State to undertake. In Germany, especially in Bavaria and Baden, live stock insurance has received a considerable measure of public assistance ; in France, agricultural insurance societies have been accorded exemptions in regard to stamps and registration and have received subventions ; and several American States conduct public schemes of hail insurance.[1]

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[1] *Agricultural Tribunal of Investigation*, pp. 92, 106 ; Dampier-Whetham, *Politics and the Land*, p. 42.

Section 3. *State Assistance to the Craft of Agriculture*

Sub-section 1. *Costings Research*

So far we have been dealing with State assistance to the science of agriculture ; we must next deal with assistance to the craft. The transition from the science to the craft corresponds to the transition from the physical to the economic law of diminishing returns. In the former physical qualities are the unit of measurement, in the latter, money values, costs and prices. We have already emphasised that the reduction of his costs is the most promising method by which the farmer can hope to increase his profit, and we must now consider what the State can do to assist him in attaining this desirable result. Before passing to the consideration of the methods by which each separate cost can be reduced, it is necessary to say a word about the measurement of costs in general. Action must rest upon knowledge ; and no effective measures can be taken to reduce costs, the level of which is a matter of ignorance or at best of conjecture. The most successful campaign of cost reduction must rest upon a basis of research on costs, the importance of which has already been emphasised. The two principal methods of cost research are known as cost accounting and the survey. The former consists in the analysis in detail of the organisation of an individual farm in order to discover opportunities of economising materials or effort; the latter involves the examination and comparison of a large number of farms of similar type with the object of isolating certain features which may be associated with success or with failure and to show how these may be developed or modified on individual farms. The former, or cost accounting method, is limited by the expense of its operation, and is tending to lose ground in favour of the survey method.[1] Costing is the economic counterpart of scientific research, and is essential if the craft, as distinct from the science of farming, is to be successfully improved. It resembles its scientific counterpart in one respect, namely, that it is equally outside the power of individual farmers. The survey method in particular requires the services of a staff of skilled observers and of experts to analyse the results obtained. Economic research has precisely the same claim to State assistance as scientific research. That claim has long been recognised in the United States and on the Continent of Europe, but it is only in recent years that it has been admitted in England.[2]

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[1] *Agricultural Tribunal of Investigation*, pp. 76, 94 ; Carver, *Elements of Rural Economics*, pp. 153–4 ; Boyle, *Agricultural Economics*, p. 206 ; Augé-Laribé, *op. cit.*, p. 184 ; Cahill, *Report on Agricultural Credit*, etc., Cd. 6626, p. 266 ; and see a series of articles by Dr. G. Rocca in the *International Review of Agricultural Economics*, beginning in 1913.

However, the tide has turned in England. The Agricultural Tribunal recommended that "more attention should be paid to research into economic questions, especially methods of farm management and the comparative costs of production and marketing, and that substantial appropriations should be made for this purpose,"[3] and the Committee on Agricultural Economics appointed by the Empire Marketing Board recommended that "agricultural economics should be regarded as an essential part of agricultural research."[4] Similar recommendations were made by the Irish Free State

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[1] *Agricultural Economics in the Empire*, pp. 8–11; and see *The Relation of Labour Costs to Total Costs in Agriculture*, C.E.I. 27, p. 6.

[2] *Agricultural Tribunal of Investigation*, pp. 60–1; *Agricultural Economics in the Empire*, pp. 3–4; *Report of Business Men's Commission on American Agriculture*, p. 271; Orwin, *Determination of Farming Costs*, pp. 11, 117.

[3] P. 92.

[4] *Report*, p. 2.

Commission on Agriculture.[1] The scope of the research recommended by these bodies embraces the whole field of production, including marketing, but we shall defer consideration of the latter until we come to discuss methods of reducing marketing costs in particular.

The State can aid in the work of economic research not only by providing the funds for research stations and by subsidising those already started by private agencies, but also by the collection and publication of adequate statistics relating to agricultural areas, yields and prices and to meteorological phenomena which affect agricultural production. It is unnecessary to repeat what has been said about the dissemination of the results obtained to the farming community. The necessity of itinerant instruction is, if anything, greater in the case of economic than of scientific knowledge.

Sub-section 2. *Regulation of the Size of Farms*

The intimate connection between the size of the farm and the success of the farm enterprise was indicated in the last chapter. For each type of farming there is an optimum size of holding, the lower limit of which is determined by the necessity of providing continuous use for the labour and machinery employed, and the upper limit of which is determined by the capacity of the farmer to supervise the enterprise. It is obviously undesirable that farms lying outside these limits should exist, and it is therefore a legitimate function of the State to take action to prevent them from coming into being or to abolish them if they already exist. State policy for this purpose must be carefully distinguished from three other similar branches of policy. First, it must be distinguished from the policy of encouraging small holdings in the interest of providing rural employment and of keeping a large population on the land. Such a small holdings policy is to be found in operation practically everywhere at the present day, but it is dictated by motives other than the attainment of the optimum size of unit of agricultural production. It aims at the increase of the size rather than of the efficiency of the industry. Secondly, it must be distinguished from legislation relating to inheritance which is designed to prevent the ownership, as apart from the occupation, of land being concentrated in the hands of a small number of proprietors. Such legislation may affect the method by which land is held, and may thus, by its reactions on the tenure question, indirectly influence the size of holdings, but it is designed primarily to regulate the amount of land owned by landed proprietors rather than the amount of land farmed by individual occupiers. Thirdly, it must be distinguished from the policy of breaking up large estates for the purpose of creating occupying owners. This policy aims at reforming land tenure, and in many cases is pursued without any regard to the size of the farm transferred from the old owners to the new. It is true that it is sometimes accompanied by measures designed to improve the size of the productive units from the economic standpoint, as for example in the sales of estates through the Irish Congested Districts Board ; but the two policies must not be confused.

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[1] P. 15.

State policy directed at maximising the efficiency of farms in so far as this depends on their size may take three forms : it may aim at the prevention or abolition of unduly small farms, at the prevention or abolition of unduly large farms, or at the rearrangement of farms which are uneconomically laid out through being scattered or divided into separate strips. Examples can be found of each of these types of policy.

The modern Irish land code provides against undue subdivision of farms by prohibiting subdivision without the permission of the Land Commission so long as any part of the purchase money remains unpaid.[1] Before the passing of the Land Purchase Acts, subdivision of a farm without the consent of the landlord was a breach of the statutory tenancy and enabled the landlord to eject the tenant.[1] In Denmark all changes in the size of properties must be approved by the Minister of the Interior. No division of a holding can take place that does not leave a nucleus of land around a farmhouse of at least one tax unit—on an average 24 acres. In Germany the law aims at preventing the division of peasant holdings in the case of intestacy.[2] The Irish Congested Districts Board in resettling the areas under its control rearranged the estates which it transferred from the landlords to the occupiers in such a way as to abolish the old "uneconomic" farms. It is important to observe in this connection that the size of farm that may be considered "economic" depends partly on the existence of supplementary means of employment in the neighbourhood, and that the provision of such opportunities of employment may enable more families to be settled on a given area of land. The Congested Districts Board therefore encouraged fisheries and rural industries as part of its policy. It may be said generally that State encouragement of supplementary means of employment, such, for example, as forestry, fisheries and cottage industries, is a proper feature of a policy designed to prevent or abolish unduly small holdings, on the ground that the area that is considered unduly small varies with the existence of such supplementary resources. The provision of adequate facilities for agricultural credit and instruction may also be relevant. It is thus impossible to segregate in a water-tight compartment State policy regarding the size of the holding, because the actual course of such a policy may be greatly influenced by the other branches of the State's programme in relation to agricultural development.

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[1] 3 Ed. VII, c. 37, s. 54.

Provisions against the creation of unduly large holdings also exist in many countries. In Ireland the consolidation of holdings purchased under the Land Purchase Acts is prohibited except with the consent of the Land Commission as long as any part of the purchase money remains unpaid.[1] In Denmark, a law dating from 1769 prohibits the management of two farms as a single undertaking while permitting them to be owned by the same proprietor.[2] In New Zealand, some of the Canadian provinces, and the State of Oklahoma, taxes are levied at higher rates on large than small holdings. These taxes are not merely part of a general scheme of progressive taxation, but are deliberately aimed at preventing the growth of unduly large farms.[3]

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[1] 44 & 45 Vict. c. 49, s. 5.

[2] *Agricultural Tribunal of Investigation*, pp. 251, 280.

The improvement of the layout of holdings by the consolidation and rearrangement of scattered strips formed a leading feature in German agricultural policy. Between 1870 and 1911 forty-seven million acres, owned by over two million proprietors, have been thus dealt with in Germany, and efforts have been made by means of special exemptions from land transfer taxes to encourage similar rearrangements in France.[4] The Irish Congested Districts Board devoted much attention to " restriping " the old scattered holdings that had grown up under the " rundale " system of cultivation, and similar measures have been undertaken in India.[5] By this means the layout of farms can be greatly improved. Other methods of improving the layout, such, for example, as the provision of farm buildings, roads and fences, are part of the capital or credit problem and will be dealt with under that head.

The possibilities of State action in regulating the size of farms are rather narrowly limited in old countries. In new countries, being opened up for the first time by pioneer farmers, the State can quite easily dictate the size of the productive unit as part of its land settlement policy. The classical case of such a regulation is the United States Homestead Act of 1862, which made 160 acres the standard area to which a landless farmer could acquire title by occupancy and improvement.[1] In old countries, on the other hand, the size of farms, as already stated, has usually been determined by all sorts of non-economic causes, and is more or less stereotyped at the present day. In such countries the agricultural policy of the State must aim at encouraging a type of farming that is suitable for the existing farms rather than at attempting to create farms of a size suitable for a predetermined type of agriculture. Thus, assuming that small farms are more suited than large for mixed dairy farming, the government of any country that is composed predominantly of small farmers should aim at encouraging mixed dairy farming rather than the cultivation of cereal crops, for which the small farmer may be in a position of comparative disadvantage.

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[1] 9 Ed. VII., c. 42, s. 32.

[2] *Agricultural Tribunal of Investigation*, p. 246.

[3] Gray, *op. cit.*, p. 315 ; Nourse, *op. cit.*, p. 679.

[4] Jouzier, *op. cit.*, pp. 391–2 ; *Agricultural Tribunal of Investigation*, p. 279.

[5] *Report of Royal Commission on Agriculture in India*, p. 138.

Subsection 3. The Reduction of the Cost of the Factors of Production

(*a*) *The Cost of Labour.*—Assuming that the size of the farm is fixed, the next question is how the cost of each factor of production can be reduced. In the previous chapter we indicated the ways in which the individual farmer can reduce the cost of these factors, and we must now inquire how his efforts in that direction can be assisted by the State. The first element in cost is that of labour. As has already been explained, the remuneration enjoyed by the labour factor in agriculture appears in isolation as one of the expenses of production only when the workers are paid in money. In a system of family farming the income of the farmer is composed of a reward for his labour with possibly an additional reward for his earnings of management. In other words, the labour income is the residual or surplus income after all the other costs have been met. But, as we saw, the labour of the farmer may still be isolated and treated as a cost even in this case, because, until it has been remunerated at the normal rate of wages for similar paid labour in the locality, no surplus in the nature of a profit has arisen and the enterprise cannot be deemed to have been profitable. In both cases—that of the paid labourer and that of the family farmer—the real cost of labour can be reduced by increasing its efficiency; in the former case the nominal, and in some cases the real, cost may also be reduced by a decrease in the rate of wages paid.

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[1] Carver, *Principles of Rural Economics*, pp. 74–5 ; Taylor, *op. cit.*, p. 267 ; Ely and Moorhouse, *op. cit.*, p. 307.

The regulation of the rate of wages is a matter in which the State can assist in many ways. The Corn Production Act of 1917 set up a wages board for the agricultural industry in England. The public fixing of wages was a necessity in the abnormal conditions during the War, and the board succeeded both in preventing labour disputes during a critical period and in ensuring that agricultural labour should participate in the prosperity of farming during the years of rising prices. Unfortunately, the board was abolished in 1921, and as a result, in Lord Ernle's words, "an invaluable opportunity of educating agricultural workers was thus lost; the useful lesson that the board existed to regulate wages down as well as up was not taught." The Agricultural Tribunal of Investigation recommended that district wages boards should be constituted, and this was done in 1924. It has been found in other industries with trade boards that the fixing of minimum wage rates acts as a stimulus to efficient organisation, and that an increase in the nominal wages paid may therefore be accompanied by a reduction in the real cost of labour.[1] The provision of subsidies for building labourers' cottages may also have the effect of keeping down the rate of wages. Both in England and Ireland large numbers of dwellings for rural labourers have been erected with the assistance of public money.[2] The provision of supplementary means of employment, such as forestry, which keeps the rural worker busy during the winter months, may also tend to reduce the wages paid him by farmers during the busy season.[1] The elasticity of the supply of labour can be increased, and its cost consequently reduced, by the provision of rural labour exchanges which direct labourers from areas of bad to areas of good employment. The Canadian Government, for example, has provided a system of ascertaining the amount of labour needed in various districts and the time when it is needed, and of transporting labourers at low rates on the railways, and a great deal has been done in France and Germany to mobilise the supply of available farm labour.[2]

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[1] *Agricultural Tribunal of Investigation*, pp. 96, 201–2; Ernle, *op. cit.*, pp. 418 D–418 H.

[2] Ernle, *op. cit.*, p. 418 Y; *Agricultural Policy*, Cmd. 2581, p. 6.

The decrease in money wages of paid labourers is, however, only a minor and relatively unimportant part of the problem of reducing labour costs in agriculture. For one thing the number of labourers paid by wages is very small compared with the number of farmers who work themselves, and, secondly, the mere reduction of money wages does not necessarily lead to cheaper labour. It is a commonplace to-day that well-paid labour is often the cheapest. The truer end at which to aim is the increase of the efficiency of the worker. This is a policy which can be applied both to paid wage earners and to family farmers; in the former case it will result in higher wages, and in the latter in greater profits. The increase of efficiency to be aimed at in the case of the family farmer is not a mere increase in his efficiency as a worker, but includes an increase in his efficiency as a manager and as a business man. He must be taught not only to perform his day-to-day operations with less waste of effort, but also to plan his enterprise with the maximum foresight and skill, to introduce more efficient implements and methods, to improve the quality of his products, and to study the marketing side of his business so as to reap the maximum monetary gain for his exertions. This comprehensive improvement can be achieved only by means of education.

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[1] Middleton, *Report on Development of German Agriculture*, Cd. 8305, p. 41.

[2] Gray, *op. cit.*, p. 368; Taylor, *op. cit.*, p. 190; Boyle, *Agricultural Economics*, p. 105. An account of what has been done in this respect by the governments of different countries is contained in the *Technical Survey of Agricultural Questions*, published by the International Labour Office in 1921, pp. 39–63; Immigration regulations may also affect the labour supply; *Report of Business Men's Commission on American Agriculture*, pp. 24, 228.

The education needed to produce these good results may be provided by many different agencies. Much has been done in the past by enlightened landlords and land agents, by private institutions, such as monasteries, convents, and schools, by societies, such as the Royal Agricultural Society of England, the Highland and Agricultural Society of Scotland, and the Royal Dublin Society, and by co-operative societies formed by the farmers themselves. But by far the principal agency for promoting such education at the present day is the State. The provision of technical instruction in industry is a universally admitted function of every civilised government to-day. If the justification of the provision of such instruction out of public moneys depends upon the inability of the industry assisted to help itself, no other industry can present such an overwhelming case for assistance as agriculture. The peculiar helplessness of the farmer as compared with producers in manufacturing industry is nowhere more evident than in his inability to keep in touch with the latest technical improvements in his trade. His isolation, the necessarily small-scale organisation of his business, his remoteness from his market, and his natural conservatism all combine to render him a particularly proper object of public educational assistance.[1]

It cannot be too strongly emphasised that the provision of mere technical education is not in itself sufficient. Technical instruction may prove practically valueless if the foundations of a sound general education have not been securely laid. In no industry are a strong, persevering, adaptable character and a ready intelligence so necessary as in agriculture. The rapid variations in physical conditions require an adaptability that is not called for in the handling of elements that are more amenable to human control than the winds, the seasons, and the soil. In every country where agricultural education has been most fruitful in its results, it has been supported by an excellent foundation of general education, literary, cultural and religious.[1]

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[1] *Final Report of International Economic Conference*, p. 49.

It is sufficient for us to draw attention to the essential connection between general and technical education. To attempt to discuss the best methods of general education would be to diverge into a wide and controversial field far distant from the proper realm of agricultural economics. Even the narrower and more relevant field of technical education cannot be thoroughly explored in an essay of this kind, which is concerned with the discovery of principles rather than with the details of their application. The most suitable system of technical education in agriculture differs from time to time and from place to place; the systems of no two countries are identical; each is adapted to the particular type of farming which it is designed to improve. Nevertheless, in spite of this diversity, there emerge some features which are to be found in many systems, if not in all, and may therefore be taken to represent the most important methods of general application.[2]

We have already discussed the necessity of providing research stations where the knowledge of the science, the craft and the business of agriculture may be advanced. Education is concerned rather with the dissemination of acquired knowledge than with acquiring new knowledge. We are not, therefore, concerned at present with institutions for research, the need for which has already been demonstrated. The fact that research and instruction are frequently carried on under the same roof does not abolish the essential distinction between the two functions.

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[1] *Agricultural Tribunal of Investigation*, pp. 89, 120; Irish Free State *Commission on Agriculture*, p. 57; Taylor, *op. cit.*, chap. x.

[2] The educational facilities provided in different countries are described in detail in the *Technical Survey of Agricultural Questions* published by the International Labour Office in 1921, pp. 297 *et sq.*

At the top of the educational structure of most countries are to be found the institutions that provide the highest type of agricultural instruction, designed for the training of teachers, estate managers and other leaders of the industry. Examples of such institutions are: the faculties of agriculture at British, Irish and American universities, the *Institut Agronomique* in France, the Agricultural High Schools in Denmark, and various specialised institutions for the study of zoological and botanical science. Next in order of importance come the institutes, less scientific and more practical, for the training of farmers and their sons. The provincial agricultural colleges in Ireland, the *Écoles pratiques* in France, and the *Landwirthschaftschulen* in Germany are examples of this type of institution. At the bottom of the scale, but by far the most important medium of agricultural instruction, comes the system of itinerant instruction, which, as has already been said, brings the results of scientific and economic research down to the actual cultivator of the soil. The necessity for this type of instruction arises from the fact that, in agricultural education, the supply must precede the demand. The very isolation and conservatism of the farmer which render him such a peculiarly fit object for education incline to make him unappreciative of its advantages. He becomes contented with his existing methods, and will not voluntarily resort to any institution that seeks to indicate possible improvements. Hence there arises the necessity of bringing instruction to his own door by means of itinerant teachers. These teachers not only keep the farmer in touch with the students in the research institutes; they also keep the research institutes in touch with the problems of the practical farmer. They are an indispensable link in the chain of the improvement of agriculture through research and education.[1]

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[1] *Agricultural Tribunal of Investigation*, pp. 122–4.

The itinerant instructor teaches by precept and by demonstration. Seeing is believing, and the average farmer is induced to reform his methods more readily by example than by advice. The organisation of demonstration plots and farms has always, therefore, been an important function of the itinerant instructor, especially in backward countries where many of the cultivators are illiterate. The introduction of improved breeds of plants and animals may be attained by means of demonstrations of their superior value, accompanied by the provision of opportunities for the farmers themselves to test the advantages of such improvements. In Ireland the work of the itinerant instructors in improving the breed of live stock has been materially aided by the provision of premium breeding animals, subsidised by public moneys. After a certain point has been passed, the methods of persuasion may be replaced by those of compulsion; the encouragement of good methods may give way to the prohibition of bad. Thus, in the Irish Free State, all breeds of live stock are being improved in consequence of compulsory registration of breeding animals. Measures of this kind are educational in the sense that they are tending to substitute good methods for bad, at first by persuasion and example, and afterwards by compulsion. In so far as they are designed to effect grading and standardisation they may be regarded as economies on the marketing side of the farmer's business, but they also have an effect on the quality of the product itself and are therefore relevant in a discussion on increasing the efficiency of the productive process.[1]

The last method of economising labour is the introduction of labour-saving devices. In this connection a supply of cheap power to operate machines may be important, as many machines may prove uneconomical unless power can be cheaply obtained. The development of hydro-electric schemes may thus help the farmers. In Germany, the distribution of electricity is assisted by the local authorities taking shares in co-operative supply societies.[1]

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[1] *Agricultural Tribunal of Investigation*, p. 62; *Irish Free State Commission on Agriculture.*

(*b*) *The Cost of Capital.*—Adequate credit facilities are indispensable if any scheme of agricultural improvement is to prove a success. Research and education will prove sterile unless the farmers are in a position to make use of the improved methods that are discovered or taught. The existence of a sound credit structure is a necessary condition for the success of any policy designed to improve agriculture by promoting efficiency in cultivation and marketing. Unfortunately, as we have already seen, the natural operation of the capital and credit market frequently fails to supply the requirements of the farming classes, who labour under several peculiar and characteristic difficulties in this respect. In so far as any essential requirement of industry is not supplied by the free working of the market, the State must endeavour to supply the want. The duty of the State to aid the agricultural producers in obtaining capital and credit is not questioned to-day even by the most extreme individualist.

Certain events in recent years have increased the difficulties of the farming class in respect of capital and credit, and have therefore emphasised the need for State assistance in practically every country in the world. The destruction and damage to farm buildings and even to the land itself caused by the War, the widespread creation of small holdings owned by peasant proprietors and the redistribution of large estates, the impoverishment of landowners in countries where the system of tenancy has been retained, the need for supporting a larger population on the land owing to the increase in the number of the people, the movement towards the industrialisation of certain branches of farming, and the rise in the rate of interest from its pre-war level, have all contributed towards making the problem of agricultural capital and credit a national or rather an international question of the first importance. Everywhere, the duty of the State to assist the agricultural industry to surmount its difficulties is admitted.[1]

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[1] Cahill, *Report on Agricultural Credit*, etc., Cd. 6626, p. 221.

Schemes which aim at the improvement of large areas rather than at that of individual holdings or estates, as for example schemes of arterial drainage, irrigation and land reclamation, are clearly outside the scope of individual initiative and must be undertaken by public authorities. "To bring into productive use every acre capable of being farmed at a profit would seem to be a rudimentary principle of national policy throughout the civilised world."[2] The financing of schemes for the reclamation of waste lands, the prevention of flooding, and afforestation on a large scale must be supported by public funds, although it may be possible to charge the repayment of advances on the lands benefited by the improvements effected. The provision of public credits for such purposes forms part of the agricultural policy of every country. What we are more immediately concerned with here is the provision out of public funds of capital and credit facilities for individual landowners and farmers.

The duty of the State in this respect arises only when private sources of credit have failed. If there is a possibility that the existing credit institutions can be stimulated into granting additional facilities, it is desirable that they should be encouraged to do so rather than that new institutions should be established. The situation of every country differs regarding the facilities that exist and the needs to be supplied. In some countries private institutions designed to provide agricultural credits have arisen through private or co-operative enterprise, in others no such institutions are to be found; the landlords in some countries supply the credit needs of their tenantry better than in others; it is sometimes the need of the landowner for long term credits and sometimes the need of the peasant for short term credits that calls most imperatively to be satisfied. The policy of each State must be framed with a view to its own special conditions; no one method of public assistance to credit can be universally applied.

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[1] C.E.I. 36, pp. 651–2; *Report on Agricultural Credit*, Ministry of Agriculture and Fisheries. Economic Series, No. 8, pp. 4, 10–11.

[2] *Liberal Industrial Inquiry*, p. 335.

In Germany, for example, the land mortgage banks or *Landschaften* were the creation of private enterprise, and the magnificent structure of co-operative credit was built up from below with a comparatively small degree of assistance from the State.[1] In Denmark, the State advances money for the purchase and stocking of small holdings and guarantees the bonds of credit associations in certain districts.[2] In France, the State assists every type of agricultural credit through the *Crédit Agricole*; there is no other country where the public assistance in this respect is so widespread, so thorough and so symmetrical—" the result of a happy co-operation between the spontaneous activity of the agricultural community and the efforts of the legislature." [3] Indeed, it has sometimes been suggested that the French plan errs on the side of excessive generosity to the farmer. Too great facilities for obtaining credit may prove almost as injurious as insufficient facilities, through encouraging farmers to borrow money which cannot be invested so as to earn the rate of interest which has to be paid for it. The farmer must be concerned not only with what capital costs but with what it can earn. " Cheap credit," it is stated in the Report of the Royal Commission of Agriculture in India, " is a blessing to a rural population only when the average cultivator is possessed of the knowledge and strength of character required to induce him, on the one hand, to limit his borrowing within the range of his capacity to repay, and, on the other hand, to apply the greater part of the borrowed money to sound productive purposes."[1]

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[1] Cahill, *Report on Agricultural Credit in Germany*, Cd. 6626.

[2] *Agricultural Tribunal of Investigation*, p. 259; *The Times International Banking Number*, June 30, 1928.

[3] Conacher and Scott, *Report on Agricultural Credit in France*, p. 4, and see Jouzier, *op. cit.*, pp. 471–81.

In the United States, twelve Federal Land Banks and twelve Intermediate Credit Banks, financed from public funds and granted certain exemptions in respect of taxation, have been established to supply the long term and intermediate term credit needs of the farmer respectively.[2] In England, permanent improvements were assisted by advances under the Improvement of Land Act,[3] and provision is now made for the assistance of co-operative credit societies.[4] An Act has just been passed providing for the creation of an agricultural mortgage loan company for the purpose of providing long term loans for farmers. This company will receive considerable financial assistance from the Treasury. Provision is also made for the farmer's short-term credit requirements by the recognition of a new type of floating charge, the chattel mortgage, on his stock and other assets.[5] In the Irish Free State, a very comprehensive body known as the Agricultural Credit Corporation has been established with wide powers to assist every type of agricultural credit, by means of loans to co-operative societies and to individual farmers. Part of the capital of this corporation has been subscribed by the Government, which also guarantees its debentures.[6] These few examples are sufficient to indicate first, that the duty of the State to assist agricultural credit is universally admitted, and second, that the particular form which the public assistance takes varies according to the needs of each country.[7]

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[1] *Abridged Report*, p. 48; *Agricultural Tribunal of Investigation*, pp. 116–118, 128, 299–300; *Report on Agricultural Credit*, pp. 14–16; Ely and Moorhouse, *op. cit.*, p. 223.

[2] Taylor, *op. cit.*, pp. 200 *sq.*; Ely and Moorhouse, *op. cit.*, pp. 221–3; *Report on Agricultural Credit*, pp. 40 *sq.*; Carver, *Elements of Rural Economics*, pp. 137–40.

[3] 27 & 28 Vict. c. 114.

[4] Agricultural Credits Act, 1923; 13 & 14 Geo. V, c. 34.

[5] 18 & 19 Geo. V, c. 43.

[6] *Second Interim Report of the Banking Commission*; Statute No. 24 of 1927.

[7] On this subject generally see C.E.I. 36, pp. 651–8; Herrick, *Rural Credits*.

(c) *The Cost of Raw Materials.*—Next in order among the costs of production which we enumerated in the previous chapter is the cost of raw materials, such as seeds and fertilisers. Here also the State can assist the farmer in reducing his costs. In the first place, legislation may provide for standardising and guaranteeing the quality of the raw materials which he purchases and for the public analysis of samples of seeds and fertilisers. Such legislation lessens the risk of waste caused by impure or inferior raw materials. Examples of measures of this kind are the Fertiliser and Feeding Stuffs Act, 1906, and the Seeds Act, 1920.

It was stated in the previous chapter that the best method by which the farmer can reduce the cost of his raw materials is that of co-operative purchase. While the organisation of co-operative societies is primarily a matter for farmers themselves, it can be assisted and advanced by State action. The propriety as distinguished from the possibility of this type of State assistance to agriculture has frequently been questioned by those who speak on behalf of private trading interests, but the duty of the State to encourage co-operative organisation resembles the provision of credit facilities in this respect, that it is a pivotal point on which the success of every policy of agricultural improvement depends. The good results of research and education are frequently not realisable unless farmers are organised so as to translate them into practice ; co-operative associations are themselves valuable channels through which the knowledge of improved methods of production can be transmitted ; and they enable small producers to enjoy the advantage of comparatively large scale production with its resulting economies. Such organisation, moreover, enables producers to devote their attention to the cultivating side of their business and takes the marketing side out of their hands, and it ensures that they will not be deprived of the fruits of improved productive methods by the superior business instincts, not to say the rapacity, of the middlemen with whom they deal. A type of organisation that promises such great benefits to the industry cannot be denied assistance as part of any public policy designed to improve agricultural efficiency.

It would be possible to bring forward a large consensus of the most authoritative opinion in favour of the principle of State assistance to the co-operative movement. The following are a few typical instances of the expression of such a view. The Majority Report of the Agricultural Tribunal of Investigation says: "State assistance to agriculture is more effective and economical when the agricultural community is co-operatively organised than when it remains in a position of dominant individualism, and, if for no other reason, the State would be justified in assisting the growth of agricultural co-operation by which it will be enabled the more effectively to promote its educational and other services"; and the Report recommends that: "the government should continue to provide funds for propaganda in aid of the agricultural co-operative movement."[1] The Irish Free State Commission on Agriculture says that "education in the true spirit and practice of co-operation is a proper case for State aid."[2] The Final Report of the International Economic Conference states that: "it is the interest of governments to encourage agriculture and the agricultural associations that have as their object the improvement of the situation of the agricultural population," and the following methods of "supporting the co-operative movement" are suggested: "the creation of chairs at universities or other scientific institutions, the institution of public courses dealing with the co-operative movement, and a fiscal policy of abstention from discriminatory measures against co-operative societies."[3]

The measure of the assistance given by the State to the movement must depend on the needs of each country. In those countries where the movement has developed normally from below, as, for example, Denmark and Germany, the sphere of State action is obviously less wide than in those other countries, such as Ireland, Great Britain and India, where, for various reasons, it has developed tardily or not at all. Even in the former countries, however, the co-operative movement has always received the active assistance of the public authorities.[1] The assistance given should take the form of propaganda and education in co-operative methods. Subsidies to trading societies should never be given, because the only justification of the existence of such societies is that they are a more efficient and economical method of doing business than the alternative agencies with which they compete. Once the initial difficulties of their formation have been surmounted, if necessary by means of public assistance, such societies must survive by their own strength or perish through their own weakness.[2] But, while they cannot claim exceptional assistance in the conduct of their business, co-operative societies can legitimately demand that they shall not be subject to any exceptional impediments or obstacles, and it is therefore the duty of the State to frame a code of law which will enable such societies to develop fully and freely. The laws of many countries impose restraints on the liberty of co-operative organisation ; where such laws exist there is an unanswerable case for their modification or repeal.[3]

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[1] *Agricultural Tribunal of Investigation*, pp. 66, 73, 93.

[2] P. 52.

[3] Pp. 48–9, and see *Report of Agricultural Sub-Committee of Reconstruction Committee*, p. 54, and *Royal Commission on Agriculture in India, Abridged Report*, p. 55.

(*d*) *The Cost of Taxation.*—Taxes on any of the factors of agricultural production, in so far as they cannot be shifted into the price of the commodities produced, lower the farmer's profit. Over-taxation has frequently been complained of by the farming classes. "From the day of the exactions of the Oriental monarchs and of the later imperial Roman tax system to the mediæval methods of Spain and the arbitrary land tax of pre-revolutionary France much of the misery of the agricultural classes must undoubtedly be attributed to the revenue system which burdened primarily the farmer."[1] A wise taxation system must therefore engage the attention of any Government which is anxious to increase the prosperity of its farming industry. As was indicated in the previous chapter, in this matter the farmer is unable to help himself in any way; he is at the complete mercy of his rulers.

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[1] *Agricultural Tribunal of Investigation*, pp. 64–5 ; Cahill, *Report on Agricultural Credit*, etc., Cd. 6626, p. 266.

[2] *Agricultural Tribunal of Investigation*, pp. 89, 139–40, 197.

[3] *International Economic Conference Final Report*, p. 49 ; Nourse, *The Legal Status of Agricultural Co-operation* ; *Report of Business Men's Commission on American Agriculture*, p. 13 ; Gray, *op. cit.*, p. 529. The relation of the State to co-operation was discussed at the Wembley Conference in 1924. The discussion, which included a speech by Sir Daniel Hall, is reported in the *Year Book of Co-operation in the British Empire*, 1925. A comparative survey of co-operative legislation in every country is contained in the *Year Book of Agricultural Co-operation in the British Empire*, 1928.

The question of the shifting of taxes on land and the other factors of agricultural production has given rise to a great deal of interesting theoretical discussion. From this discussion there emerges one great conclusion, namely, that a tax on economic rent cannot be shifted. This conclusion, which is unquestioned to-day, is simply the application in the field of taxation of the general principle that rent is not an element of cost of production. It follows that, in so far as a State's agricultural policy aims at keeping down production costs, a tax on rent, including increment value duties, which are taxes on the additional public value of land, is unobjectionable. In practice, however, the isolation of rent from the other parts of the agricultural income is extremely difficult, and there is a danger that, unless regard is had to the conditions of a very long period, apparent taxes on rent may really fall on the profits necessary to remunerate the landowner for his permanent improvements.[2] Moreover, the taxation of rent may have the effect of diminishing the supply of capital available for investment by the landlords for permanent improvements and repairs, and may thus increase

[1] Seligman, *Shifting and Incidence of Taxation*, p. 230.

[2] Marshall, *Principles*, pp. 425–6.

the cost of one of the factors of production, namely, capital. A result of this kind is only an indirect effect of the tax and does not invalidate the general conclusion as to its incidence.[1] Of course, when the land is owned and occupied by the same person, the isolation of rent is almost impossible.

The general conclusion reached in the theoretical discussion regarding the incidence of taxes imposed on land at the margin of cultivation was in favour of shifting on account of the great inelasticity of the demand for agricultural products. The value of this discussion as the basis of framing practical policies of taxation has been largely nullified by the growth of international trade. The conclusions reached were founded on the assumption that the community under consideration was quite isolated. The older theory, as Seligman says, " seems to have overlooked the fact of international relations." Nowadays, with the exception of some highly perishable commodities which cannot be transported a long distance, agricultural produce travels freely from country to country, and its price is fixed without any regard to the taxation system in its country of origin. Seligman explains this very clearly : " In actual life the market value of agricultural produce is fixed by the conditions of production in widely separated localities or countries. The imposition of a tax on the landowners of any one particular locality, therefore, cannot change the price of the product. If taxes precisely identical in character and amount were imposed by all countries on all farmers, then indeed, given complete mobility of capital, the tax might be shifted to the consumer. But this is never the case. The Western farmer, the price of whose wheat is fixed in Liverpool by the conditions of production thousands of miles distant, will not get a whit more for his product if his taxes are doubled. He and he alone must bear this burden of the tax." [2]

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[1] Edgeworth, *Papers*, ii. 76.

[2] *Op. cit.*, pp. 229–30 ; Marshall, *Principles*, pp. 347, 833–4 ; Nicholson, *Principles of Political Economy*, iii. 317.

It may be generally concluded that any tax on land or any of the other factors of agricultural production will not be shifted to the consumer. The problems of incidence in connection with such taxes arise in connection with shifting between the owner and the occupier of the land, and relate therefore to the distribution and not to the size of the agricultural income. In the case of peasant proprietors and occupying owners no such shifting is possible, and the whole burden of the tax must be borne by the farmer himself. The result of such taxes, therefore, is to lower the profits of agricultural production. It follows that any State policy designed to increase those profits must exclude taxes of this kind from its revenue programme.

The general property tax in the United States has been objected to on the ground that while, theoretically, levied on all property in town and country alike, it presses with peculiar hardship on farmers owing to the inferior opportunities of evasion which they enjoy compared with urban dwellers.[1] In England the most important taxes on land are the local rates, which are felt with peculiar hardship by the farmer " who is compelled by the nature of his calling to occupy a larger area of rateable property in proportion to his returns." [2] The necessity for lightening this burden has been recognised both in Great Britain and in Ireland. In Great Britain, after October 1929, all farm land and buildings will be exempt from local rates, and in Ireland large sums are granted annually by the central exchequer to local authorities in relief of rates on agricultural land.[3] The greater part of the rates paid by the British and Irish farmers are beneficial or remunerative, that is, they are payments for services rendered to the farmers in return. It must be recognised that in so far as these services are provided by other classes of ratepayers the farmer is receiving the benefit of subsidised services, or, in other words, agricultural production is in receipt of a bounty.[1]

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[1] Seligman, *op. cit.*, p. 220 ; Ely and Moorhouse, *op. cit.*, pp. 315–6, 324 ; *Report of Business Men's Commission on American Agriculture*, pp. 321–2.

[2] *Report of Central Landowners' Association on Agricultural Policy*, 1928.

[3] Rew, *op. cit.*, pp. 102–4 ; *Agricultural Policy*, Cmd. 2581 ; Irish Free State, *Report of Department of Local Government*, 1922–5, p. 136.

The extent to which a tax on net profits can be shifted is one of the most controversial questions in the economic world to-day. All that it is necessary to say here is that, in so far as there is a possibility of such a tax being shifted at all, the possibility is less in the case of the farmer than of any other type of producer owing to the extreme immobility of his capital. This is but one aspect of the inelasticity of supply which has been fully explained in the previous chapter.

Taxes on any other factor of production except land equally tend to raise costs and to lie where they fall. For example, if any of the raw materials of production such as seeds or fertilisers were taxed, the cost of production in agriculture would obviously be raised. Moreover, many of the statutory requirements in respect of such matters as building and sanitary arrangements are concealed taxes which place the farmers who are subject to them at a disadvantage in competition with their rivals in other countries where similar regulations do not exist.[2] Any extended protective policy in favour of industrial development may have the result of injuring the farmer in two ways, first, by raising the price of some of the raw materials, machinery or other implements which he may require, and, secondly, by reducing the purchasing power of his income. Such questions are bound up with the whole problem of the effect of tariffs. All that we can do here is to indicate the danger of a tariff policy designed to favour other industries resulting in raising agricultural costs and thereby neutralising the benefit of other branches of State policy designed to lower such costs. Of course the agricultural industry, as was indicated above, may enjoy many of the external economies of production as the result of the creation of an industrially prosperous community, but this question belongs to the effects rather than to the incidence of taxation.[1]

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[1] Marshall, pp. 794, 891 ; Ashby in *Scottish Journal of Agriculture*, vi. 390. On the gradual easing of the burdens on the English farmer during the nineteenth century, see Fay, *Great Britain from Adam Smith to the Present Day*, pp. 241–3. The whole question of local taxation of agricultural land in the United Kingdom is discussed in the *Report of the Agricultural Policy Sub-Committee of the Reconstruction Committee*, pp. 66–71 ; and see a discussion at the British Association reported in *The Times* of September 12, 1928, and Venn, *The Incidence of Taxation in Agriculture ; Economic Journal*; December 1928.

[2] *Report of Central Landowners' Association on Agricultural Policy*, 1928. The compulsory levies for the maintenance of the German Chambers of Agriculture are also equivalent to concealed taxes on production ; Schindler in *Scottish Journal of Agriculture*, x. 152. Compulsory contributions to schemes of social insurance are another example of taxes which increase cost ; *Factors in Industrial and Commercial Efficiency*, by the Committee on Industry and Trade, 1927, pp. 57–8.

Sometimes taxes not primarily designed to fall on the agricultural community do in fact have the effect of raising the cost of production indirectly by means of the effect they may have on the supply of other factors. For example, the English death duties have completely altered the landlord's position as the agent for the supply of agricultural capital and credit. Owing to the heavy burden of these duties, English landlords are no longer able to advance the capital requirements of their tenants at the easy rates which they were accustomed to do, and, in order to meet these duties, much land has been forced on the market and purchased by tenants, who deplete themselves, by the payment of the purchase money, of their savings fund necessary for capital improvements. In the case of owner-farmers the payment of even moderate death duties may necessitate either selling part of the holding and thus possibly reducing its productive efficiency, or else parting with savings that are needed to provide working capital.[1]

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[1] Any attempt to discuss the effects of the American tariff policy on agriculture in the United States would involve entering a field of heated political controversy. The matter is fully debated in the *Report of the Business Men's Commission on American Agriculture*, where no very decided conclusions are reached. See pp. 24, 95–8, 169–73 of the *Report*, and see Boyle, *Agricultural Economics*, p. 206 ; Wright, *Population*, p. 87 ; Crompton, *The Tariff*, pp. 77, 101 ; Walker, *Political Economy*, p. 516 ; *Memorials of Alfred Marshall*, pp. 262–3. The import duties on iron and steel in India raise the price of agricultural implements ; *Royal Commission on Agriculture in India, Abridged Report*, p. 13.

(*e*) *State Policy on Land Tenure.*—In discussing land tenure we are not concerned with the State policy in this matter except in so far as it is aimed at the encouragement of agricultural efficiency. There is no need to enter into the controversy on the nationalisation of land which is frequently advocated for financial or socialistic reasons; the only part of State policy in regard to tenure which concerns us is that which is dictated with the object of removing impediments to efficient production which arise out of a bad system of land tenure. The effect of land tenure on costs of production is, as was explained above, indirect. The way in which land is held affects the distribution rather than the size of the agricultural income; but it may have important indirect effects on production by increasing the cost of some of the expenses which the farmer has to incur. In so far as any of these costs are raised by reason of the condition of land tenure, it is the clear duty of the State to introduce measures of land reform.

The ways in which a bad system of land tenure may affect the cost of production are numerous. Farmers may be deprived of the security of enjoying the fruits of their labour or capital investments, the supply of land available for cultivation may be artificially restricted, the fertility of the soil may be permanently lowered by wasteful and improvident cultivation, the size of farms provided may be unsuitable, the difficulties of acquiring capital may be increased, and the successful application of a progressive agricultural policy in other directions may be impeded owing to the existence of an unsatisfactory system of land tenure. In this matter every country has its own peculiar problems: in

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[1] *Report on Agricultural Credit*, pp. 11–12; *Colwyn Commission on National Debt and Taxation*, pp. 186–8; Dampier-Whetham, *Politics and the Land*, pp. 104–6; Orwin and Peel, *op. cit.*, p. 5; *Report of Central Landowners' Association on Agricultural Policy*, 1928.

Ireland the dominant problem was the insecurity of tenure, whereas in England at the present time it is the difficulty regarding capital. Obviously it would be impossible to lay down any general programme of land tenure reform; every country must adopt a policy calculated to suit its own conditions and to reform the peculiar evils with which it finds itself confronted.

Security against confiscation of improvements is universally regarded as a condition precedent to efficient farming. Where such security is absent enterprise is damped and progress is impossible. The earlier Irish Land Acts attempted to remedy this evil in Ireland, first, by granting compensation for improvements and for capricious eviction, and secondly, by erecting a judicial machinery for fixing rents and for securing the tenant against disturbance. Similar, though less drastic and far-reaching legislation has been introduced in England in recent years.[1] While measures of this kind may succeed in achieving their immediate object, they may lead to a situation where the landlord is reduced to the position of a mere receiver of rent without any personal interest in the cultivation or the improvement of his estate. In Ireland this method of dealing with the land problem definitely broke down when it was seen that the system of dual ownership led to most undesirable results, and competent observers are of opinion that equally undesirable results are tending to appear in England to-day. While compensation for improvements and disturbance does not satisfy the tenants, real security of tenure is odious to the landlord. If the result of State interference to safeguard the tenant against insecurity is to produce the system of dual ownership, it may be necessary for that interference to be extended still further. In Ireland it has in fact been extended in the direction of the purchase by the State of land for transfer to the tenants, and in England its extension in the direction of land nationalisation is being seriously discussed.[1]

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[1] *Agricultural Tribunal of Investigation*, pp. 306–10; Orwin and Peel, *The Tenure of Agricultural Land*, pp. 1–4.

Another reason why the State may find it necessary to extend its interference beyond the mere regulation of the letting contract between landlord and tenant is that, as long as the land is owned by a landlord class, the application of a far-reaching constructive policy in favour of agricultural development may be impossible. Public opinion may refuse to sanction the expenditure of public money on the encouragement of an industry when the result of such encouragement may be simply an increase of rents. On this matter there is striking consensus of the most weighty opinion. Professor Orwin says: "Should conditions arise which call for interference with the normal course of events in the interests of the community at large the State will always be precluded from taking direct action to foster a rural industry so long as private property in land exists in conjunction with the system of tenant occupation"[2]; Lord Ernle says: "However greatly State assistance may benefit agricultural industry it can with difficulty be justified where land is the private property of individual owners who cannot contribute to the expenditure"[3]; and Professor Macgregor says that "it is the belief that benefit will accrue to the landlord that besets many suggestions to relieve agriculture in this country."[4]

Assuming that State interference with a system of private ownership by a land-owning class is rendered necessary by considerations of this kind, it will take the form either of the establishment of a peasant proprietary or of the nationalisation of the land. The former method is that which is most usual in actual practice. The most striking example of it is the land purchase code in Ireland, whereby practically the whole soil of the country has been transferred to the tenantry by means of State advances. We have already discussed the relative merits of peasant proprietary and tenant farming in general, and here we are only concerned with the relative values of these two systems from the point of view of State action. There is no need to recapitulate the numerous advantages of peasant proprietary, which have no doubt weighted the scales in favour of this class of tenure in practically every European country since the war. The outstanding disadvantage is that the capital and credit needs of the newly established proprietors are not necessarily supplied by the mere grant of the ownership of land. In order that a policy of this kind may be successful it must be supplemented by the provision of credit facilities and of rural education.[1] If a policy of creating peasant proprietors is not accompanied by supplementary measures of this kind it may prove a curse rather than a blessing. Moreover, there is a danger that the State may not be able to ensure that the farms will be efficiently operated by their new proprietors, who, having purchased their holdings, are responsible to nobody but themselves.

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[1] Orwin and Peel, *op. cit.*; Douglas, "The Policy of the Agriculture Act," in *Scottish Journal of Agriculture*, 1921, p. 16.

[2] Orwin and Peel, *op. cit.*, p. 9.

[3] *Op. cit.*, p. 418z.

[4] *Agricultural Tribunal of Investigation*, p. 149, and see Dampier-Whetham, *Politics and the Land*, p. 129; Orwin and Peel, *op. cit.*, p. vi. The rating relief proposed by Mr. Churchill in the 1928 Budget has been criticised on the ground that it will simply increase rents.

The disadvantages and dangers of a peasant proprietary have inclined many people to favour the alternative policy, namely, nationalisation. It is fairly certain that, if any extreme measure of State interference with the existing system of land tenure is introduced in England, it will be on the lines of nationalisation rather than the creation of a peasant proprietary. For one thing, the English tenants on the whole do not appear to desire to be made full owners of their farms.[2] Moreover, such measures, if introduced, would be the direct result of the failure of the existing system of tenure to meet the capital and credit needs of agriculture in view of the changed conditions since the War; and it would appear unwise to institute a new type of tenure in which these difficulties would remain as great as ever. A system of land nationalisation on the lines approved by Professor Orwin and Mr. Peel would appear to retain the good features of the present system while avoiding the bad. Security of tenure would be obtained while efficient farming would be advanced. The cost of State management and supervision would be minimized, the size and layout of the holdings could be improved, the capital and credit needs of the holders could be satisfactorily provided, and the spread of education would be assisted by a land system of this kind, for which there is an existing precedent in Denmark, where the holdings purchased under the laws of 1919 are strictly controlled and supervised by the State in the interest of efficient agricultural production. The principle of State interference for such an object was admitted in the short-lived Agriculture Act of 1920, and one may therefore conclude that, if State interference is rendered necessary by the breakdown of the existing system, it would be most advantageous if it were applied on these lines. The payment of proper compensation to the existing landowners would exclude the element of confiscation, while the management by qualified land agents of the purchased holdings would make for efficient production.[1]

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[1] C.E.I. 36, p. 653.

[2] Orwin and Peel, *op. cit.*, p. 13.

Another matter in which State interference is necessary is the facilitation of land transfer, so as to ensure that the land will not be withheld from cultivation owing to legal complexities and difficulties. The simplification of the land laws and the provision of some system of registration of title may do much to increase the effective supply of land in the market and to lower the initial cost of embarking in farming. Similarly, measures may be taken for insisting on the productive utilisation of large estates or tracts of land which are devoted to unproductive purposes by their owners and thereby withheld from the market. Apart from the general question of nationalisation the State may always legitimately take over tracts of land for particular purposes such, for example, as afforestation, or for the conservation of national resources, which would not be provided for by individual enterprise.[1]

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[1] Orwin and Peel, *op. cit.*, pp. 66–72 ; *Agricultural Tribunal of Investigation*, pp. 260–3 ; Dampier-Whetham, *Politics and the Land*, pp. 128, 131 ; *The Times*, Agricultural Number, April 3, 1928. The whole question of land nationalisation is well discussed in Ely and Moorhouse, *op. cit.*, chap. x.

Section 4. *State Assistance to the Business of Agriculture*

Sub-section 1. *Research on Marketing*

The State can assist the farmer in many ways to reduce his costs of marketing. At the basis of all effective assistance there must be knowledge of the facts of the problem to be solved, and hence research is very important in this matter. Research into marketing conditions is very complex because the conditions of marketing every commodity are different, and a whole series of investigations on a commodity basis is necessary. Marketing research may be divided into, first, research into the functions and agencies of marketing, and, second, research into the conditions of demand and supply for particular commodities. The latter subject arises in the discussion on orderly marketing and will be dealt with later; it is with the former type of research that we are immediately concerned.[2]

The scientific problems of agriculture have engaged the attention of research workers for a long while, but the economic problems, especially those connected with marketing, have been relatively neglected. In recent years, however, a good deal has been done to make good this defect. In 1913 an Office of Markets and Rural Organisation was added to the United States Department of Agriculture. This office has a carefully chosen staff of expert investigators who are doing excellent work in research into the marketing conditions of the various types of agricultural produce. The Investigations of the Imperial Economic Committee cover the marketing of Empire produce in Great Britain, and the Ministry of Agriculture and Fisheries possesses a Markets and Co-operation Branch which has issued a series of valuable reports. The International Institute of Agriculture has devoted considerable attention to research on marketing, but the main impression conveyed by a perusal of its publications on the subject is that what has been already accomplished is insignificant with what remains to be done in the future.[1]

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[1] Ely and Moorhouse, *op. cit.*, pp. 171–2, 274; Sidgwick, *Principles of Political Economy*, p. 476.

[2] *Agricultural Economics in the Empire*, p. 12.

The good results that might be obtained by such research are thus summarised by the Committee appointed by the Empire Marketing Board to inquire into the subject of economic research: "There is a need in the interests of the farmer of a comparatively elementary study of the mechanism of marketing, in order that he, being somewhat better informed thereby, may individually be able to improve his own method of disposing of his produce, or that he may, as a result of the knowledge of the mechanics of marketing, be induced to organise with his neighbours to sell to better advantage. From the elementary survey the essential economic aspects of the trade in each product are made clear, and more advanced research in their essential aspects may follow, leading to greater efficiency in the marketing system either through private trade, co-operative associations or State marketing."[2] This passage makes it clear that the objects of the research are, first, to induce individual farmers to adopt improved methods, and second, to provide the information upon which an enlightened State policy can be based.

In regard to the attainment of the first of these two objects, all we have already said about the importance of the results of research being conveyed to the farmers is relevant. Obviously, the results of economic research will be just as sterile as those of scientific research if they are not communicated to the individual producers. It is therefore part of the duty of the various agents of agricultural education, whether institutional or itinerant, to instruct in improved methods of marketing. Such instruction may take the form of encouraging the establishment of co-operative selling agencies. The conclusions already reached about the legitimacy of the State's encouraging co-operative purchasing societies hold good also in the case of the encouragement of selling societies. The organisation of such societies, by means of propaganda and assistance in surmounting initial difficulties, is undoubtedly a proper function of the State, but anything in the nature of a bounty or subsidy when they have actually begun to trade would not be justified and would be very properly attacked by rival trading interests. If such societies cannot hold their own in open competition with private trading agencies they cannot justify their existence. The only reason for their encouragement is that they promise superior efficiency in the performance of certain marketing functions; if such superior efficiency is not in fact realised then the whole case for their encouragement has disappeared.

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[1] Weld, *op. cit.*, p. 464; Macklin, *op. cit.*, p. 374; *Eighth Report of Imperial Economic Committee*, Cmd. 3018; *Agricultural Economics in the Empire*, p. 13; *Agricultural Tribunal of Investigation*, pp. 60, 92; *Preliminary Report on Marketing of Agricultural Produce*, 1925; *Royal Commission on Agriculture in India, Abridged Report*, p. 43; *Report of Imperial Agricultural Research Conference*, 1927, p. 58.

[2] *Agricultural Economics in the Empire*, p. 13.

Education in respect of superior marketing methods should not be confined to the producer; the consumer is frequently also badly in need of enlightenment. It has been insisted above that the high cost of retail distribution is very largely caused by the extravagant and unreasonable demands of the shopping public. If lessons in more efficient methods of purchasing goods, and particularly in the value of the consumers' co-operative movement, were included in domestic economy courses in urban schools, the cost of retailing would be materially reduced.[1] The establishment of direct contact between producers' associations in the country and consumers' associations in the towns would help to reduce the cost of marketing by the elimination of unnecessary agencies ; but this desirable achievement requires propaganda, not only in the country among farmers, but also in the towns among consumers. The encouragement of such arrangements is a matter upon which the International Economic Conference laid special emphasis.[1]

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[1] Weld, *op. cit.*, p. 450.

Sub-section 2. *Reduction of the Cost of Marketing Functions*

The cost of each function of marketing may be reduced by means of State action. The first function, namely, assembling and collecting the farmer's produce, is rendered more efficient almost entirely by means of co-operative organisation, and the best method by which the State can assist is by the encouragement of the co-operative movement.

Transportation costs can also be reduced principally by co-operative organisation by the farmers themselves, and, in so far as the State assists in such reduction, it is only indirectly through the part that it plays in encouraging such organisation. But many governments have given a large measure of direct assistance to the transport of agricultural produce both by providing transport facilities and by granting cheap rates to farm produce. It is principally in new countries, such as the United States and Canada, that the provision of railways by the State in undeveloped areas has taken place, but an important European example is the vicinal railway system in Belgium which has proved of the utmost value to Belgian farmers. The provision of special cheap rates for agricultural produce is as a rule impossible unless the railways are publicly owned. Such rates have been given in Belgium and in Germany, and have frequently enabled the agriculture of those countries to survive periods of depression. The Danish Government has given subsidies on the transport of certain raw materials of farming and on steamer services to England. The derating scheme at present being introduced in England provides that part of the relief granted to the railway companies shall be passed on to the farmer by means of reduced rates for the transport of manure, feeding stuffs, potatoes, milk and live stock. In the United States, agricultural produce has at intervals been granted preferential rates by the Inter-State Commerce Commission, but the practice in this respect has not been uniform and the question of freight charges is one of the principal grievances of the American farmer.[1] It must be remembered that, if railway companies are forced by a rate-fixing tribunal to give exceptionally low rates to any type of goods, they may reduce the efficiency of the service provided in regard to speed, or loading facilities, and in this case the low rates may be obtained at too high a price. Of course every method of reducing railway rates generally will assist agriculture as well as other industries; examples of such methods are the development of competitive means of transport by water or road or the encouragement of competition between different railways; but a consideration of such matters belongs to the economics of transport rather than of agriculture. The question of road transport is one of growing importance at the present day. In so far as roads in rural areas used by farmers for going to and coming from their markets are maintained out of sources of revenue to which the farmers do not contribute, agriculture enjoys a subsidised means of transport. This will be the case in England after the new rating scheme has come into operation.

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[1] *Final Report*, p. 49. The possibility of such arrangements being brought about has been discussed on p. 111, *supra*.

The functions of wholesale and retail distribution can be cheapened mainly by co-operative organisation on the part of producers and consumers. In so far as such organisation is promoted by the State it may be said that the State has indirectly assisted in the cheapening of these functions. The State or Municipality may help to bring producers and consumers into direct contact with each other by the provision of State or municipal public markets. Experience seems to indicate that the utility of such markets is limited and their success precarious; they have been characterised by a large number of failures in the past and, of course, can never be applied to the sale of commodities that have to be handled in large quantities or transported over long distances. The assumption by public authorities of any of the functions of marketing can be justified only in so far as they will be thereby more efficiently performed; the justification of State intervention must depend on the results obtained and should not be based on any *a priori* predilections; and it may be concluded generally that State action is usually more fruitful of good results when it supplements and assists rather than when it replaces the existing private and co-operative agencies.[1]

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[1] *Agricultural Tribunal of Investigation*, pp. 18, 145, 356, 359; *Report of Business Men's Commission on American Agriculture*, pp. 255 *et sq.*; *The Times Trade and Engineering Supplement*, October 29, 1928.

Sub-section 3. *Orderly Marketing*

The fifth function of marketing is that of risk-bearing. The farmer's marketing risks are of two main kinds: first, the risk of not being paid, and second, the risk of having to accept a bad price because of the maladjustment of supply to demand. The first risk may be reduced or eliminated by co-operative organisation, and also by a public system of licensing middlemen such as has been adopted in several American States.[2] The second risk can be reduced by means of the adjustment of the supply to the demand. This adjustment, which is usually described as " orderly marketing," is a matter wherein the State can render much assistance. The aim of orderly marketing is the stabilisation of prices. Policies designed to secure this aim must be distinguished on the one hand from policies aimed at the stabilisation of general prices, which is a monetary problem proper for international rather than for national action, and on the other hand from protective policies aimed not at stabilising but at raising prices.

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[1] Weld, *op. cit.*, p. 458; Macklin, *op. cit.*, p. 394; Gray, *op. cit.*, pp. 472–4; Venn, *op. cit.*, p. 269; *Final Report of Linlithgow Committee*, p. 26; *Royal Commission on Agriculture in India, Abridged Report*, p. 44.

[2] Weld, *op. cit.*, p. 452.

Orderly marketing aims at the prevention of any surplus arising, and at its disposal if it does unfortunately arise. The former is by far the more important aim. It has already been emphasised that the problem of orderly marketing is essentially a production problem; once the farmers have taken their decisions regarding what they will produce, it is too late thoroughly to regulate supply. In every part of an orderly marketing policy the State can assist; it can aid in regulating production, in directing supplies into the best markets, and in dealing with surplus supplies by the provision and regulation of storage facilities. There is no part of the marketing process in which the State can render so much assistance as in the adjustment of the supply to the demand.

As was said already, the measure in which State assistance to any industry is justified depends upon the extent to which the industry is powerless to help itself. The individual farmer, as was also seen, is peculiarly helpless to deal with the fluctuations of prices caused by the maladjustment of demand and supply. He is, moreover, specially sensitive to the effects of such fluctuations. The case for State assistance to protect him from such great injuries from which he is powerless to protect himself is therefore overwhelming. On this point the American Business Men's Commission on Agriculture states that: "The fluctuations of prices from year to year affect other producers besides the farmer; but in his case the conditions inherent in agricultural production make the control of price fluctuations by private or individual or organised effort so much more difficult in agriculture than in other fields that the question of stabilisation of agricultural prices, like that of stabilising the general price level, transcends in some degree the sphere of private initiative and becomes a matter of general public concern."[1]

Orderly marketing depends very largely on the existence of agencies designed, first, to regulate the flow of goods to market, both by the control of production and of marketing, and second, to dispose of surplus stocks. The development of such agencies is often part of a national policy for the encouragement of co-operative methods, and, in so far as such encouragement is successful, orderly marketing is being assisted indirectly by the State. The possibility of orderly marketing is also increased by standardisation, grading, processing and storage of farm products. These methods will be discussed in connection with increasing the width of the market, and all that need be said here is that, in so far as the State assists in their adoption, it is indirectly assisting in the development of orderly marketing. The orderly marketing of goods through large scale institutions and the adoption of grading, standardising, processing and storage, are all operations which can be and frequently are performed by private or co-operative agencies without any intervention by the State. There is one service, on the other hand, which it is almost impossible for any private agency to perform, and which lies at the very foundation of orderly marketing, especially orderly production. This service is the provision of market intelligence respecting the conditions of demand and supply of various farm products, and the probable changes in such conditions in the future. The performance of this service is the clear duty of the public authorities.

The provision of marketing intelligence of this kind involves first, a study of the existing and probable future market conditions, and second, a machinery for making known the results obtained. This study constitutes the second branch of marketing research as classified by the Empire Marketing Board, namely, " research into the market conditions of supply and demand."[1] This type of research is concerned with, not only the mechanism of the marketing of each commodity, but also the probable course of future supplies and of future consumption. Particular attention must be devoted : first, to the causes of the irregularity of supplies and the possibility of such irregularity being reduced by human effort ; second, to the openings for the utilisation of surplus supplies ; third, to the consuming habits of urban populations as influenced by money incomes, by religious, racial and hygienic influences, and by seasonal change ; and fourth, to the possibilities of substitution between competing types of food. Until much more is known about all these matters than is known at present, orderly marketing and, still more, orderly production will be impossible. The Committee appointed by the Empire Marketing Board lay much emphasis on this point. " In the interests of orderly marketing, research into market conditions is essential. Orderly marketing does not mean an equal supply. It implies a supply which is adjusted to the fluctuations of demand. Demand cannot be controlled from the agricultural side, so that it must so far as possible be foreseen. Forecasting is essential, therefore, on the demand side of the market. If completely successful regulation of supply existed, forecasting would be confined to the forecasting of demand. On the other hand, since supply is never completely regulated, forecasting of supply is also necessary. It is evident that the problem of orderly marketing and forecasting of demand and supply depend upon a thorough investigation of market conditions."[2] The necessity of some method of transmitting the results of such research to the individual farmer is so obvious that it need only be mentioned.

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[1] *Report*, pp. 176–7.

The United States have led the world in the provision of marketing research and news services. The Department of

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[1] *Agricultural Economics in the Empire*, p. 12; *supra*, p. 154.

[2] *Ibid.* p. 16.

Agriculture disseminates marketing news for the producers of every class of commodity, every agency of communication, the press, the telegraph and the radio, being utilised. The crop and live stock estimates, including statistics of the farmers' intentions in respect of the coming season, are unrivalled. To assist in forecasting there has been set up a Committee on the Agricultural Outlook composed of independent persons to supplement the work of the Department of Agriculture.[1]

In spite of all that has been done, much remains to be accomplished by extended services of the same kind. The Business Men's Commission on American Agriculture was of opinion that the Department of Agriculture is not the best body to act as a news agency, and that "there should be established a Federal Farm Board consisting of a small number of men appointed by the President and paid by the Government to aid in the stabilisation of prices and production in agriculture by advising farmers and farm organisations fully and promptly regarding the planning of production and the marketing of crops."[2] The English Committee on the Stabilisation of Agricultural Prices recommended that "a direction in which the State might give assistance would be in the provision, at a low cost or free of charge, of information with a view to enabling co-operative associations to judge, not only of the present conditions of the market, but of the tendencies at work, both at home and abroad, which might affect the market in the future."[3] The International Economic Conference stated that: "It is necessary to organise, nationally and internationally, the speedy transmission to agriculturists of information on harvests, stocks, consumption and the movements of different commodities, these being important factors in the formation of prices." [1]

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[1] Boyle, *Marketing of Agricultural Products*, pp. 441–4; Boyle, *Agricultural Economics*, pp. 131 *et sq.*; Taylor, *op. cit.*, pp. 461 *et sq.*; Nourse, *op. cit.*, pp. 415, 558. In Germany the whole national marketing of farm products is under the direction and advice of the Chambers of Agriculture; Middleton, *Recent Development of German Agriculture*, Cd. 8305, p. 27; Nourse, *op. cit.*, p. 561; Weld, *op. cit.*, p. 460.

[2] *Report*, pp. 181–2.

[3] P. 65, and see *Final Report of the Linlithgow Committee*, p. 34.

As it is impossible to look forward to anything approaching perfect control of production in the near future, the other means of effecting stabilisation, namely, the orderly flow of goods to market and the disposal of surpluses, must therefore engage the attention of governments. The methods of attaining these objects vary with the circumstances of different countries, which may be roughly divided into three main groups: first, countries which produce agricultural products principally for export, second, countries which produce both for a large national urban consumption and also for export, and third, countries which import large quantities of agricultural products. An example of the first type of country is New Zealand, of the second the United States, and of the third Great Britain. Machinery designed to prevent or to reduce the fluctuations of agricultural prices, apart from control of production, have been either adopted or discussed in many countries of each type. The degree of public assistance given to the creation of such machinery has varied in different countries.

The control of the flow of supplies to market in exporting countries is usually in the hands of co-operative organisations. The Canadian wheat pools are well-known instances of such control. In New Zealand the export of meat, dairy produce and fruit has been placed under the control of Boards appointed by statute. Australia possesses three export control boards with the fullest powers of regulating and controlling the export of dried fruits, dairy produce and canned fruits respectively. Government representatives sit on each of these boards, two of which have London agencies to look after the interests of the exporter in the British market. The export of currants from Greece is strictly controlled by the Greek Government, and the Spanish Government has recently undertaken the control of the export of raisins from Spain.[1]

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[1] *Final Report*, p. 51.

The control of the flow of produce to market is easier in exporting countries than in countries producing for home consumption, because all the exports flow through narrow channels at the ports and their movements can be easily observed and, if need be, checked. On the other hand, the power of an exporting country to stabilise prices by this means is small unless it supplies a large percentage of the total world consumption of the commodity controlled. Any attempt to hold back supplies from a bad market may result in driving buying orders into rival sources of supply. The Brazilian scheme for valorising the price of coffee has greatly encouraged the growing of coffee in Colombia and other rival sources of supply, and the principal reason for the breakdown of the Stevenson rubber restriction plan was that it encouraged Dutch planters to increase their production and stimulated the manufacture of reclaimed rubber. If the activities of all the producers in the world could be co-ordinated or controlled, supply could be regulated to a very great extent; and proposals have been made for world pools for certain commodities.[2] One important point about the regulation of supply by exporting countries is that such regulation can never be used to institute a system of concealed protection, from which most supply regulation schemes in other countries are but slightly removed.[3]

An example of a stabilisation scheme in a country where agricultural producers aim both at satisfying the needs of the home market and at export is that suggested for the United States by the Business Men's Commission on Agriculture. We have already referred to the Federal Farm Board recommended by that Commission as a suitable body for the control of agricultural production and the collection and dissemination of market news. The Commission recommends that there should also be established " stabilisation corporations to engage in the buying and selling of farm products for the purpose of stabilising prices," and that part of the capital necessary for the establishment of these bodies should be provided by the Federal Government. Cotton, wheat and corn are suggested as suitable commodities in which the corporations should deal; perishable products and live stock would be impossible to handle. While the primary purpose of these bodies is the withholding from market of emergency surpluses, they might at a later stage of their development " attempt the gradual control of production by influencing planting intentions and planting programmes." One method of so controlling production would be the offer of a guaranteed minimum price for all supplies offered in a certain period, by which means the farmer would be protected at least from the greater fluctuations in price due to exceptionally abundant yields. The latter functions of the corporation are, however, not an essential feature of the plan, but are rather a matter for " gradual and tentative experiment "; the essence of the plan is that there should be some central public body to stand between the supply and the demand for wheat, cotton and corn, and to absorb the minor shocks caused by changes in the conditions on either side.[1]

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[1] *Report of Committee on Stabilisation of Agricultural Prices*, pp. 56–65; *Year Book of Agricultural Co-operation in British Empire*, 1927 and 1928; Patton, *Grain Growers' Co-operation in Western Canada*. The New Zealand and Australian export controls are explained by Sir James Cooper in *The Times Trade and Engineering Supplement*, *British Empire Products Number*, May 26, 1928.

[2] Lloyd, *Stabilisation*; *Year Book of Agricultural Co-operation in the British Empire*, 1928, p. 109; *The Economist*, July 28, 1928; Patton, *op. cit.* p. 402.

[3] The Brazilian valorisation scheme and the Stevenson restriction scheme are described in Messrs. J. Henry Schröder's *Quarterly Review*, April 1928; see also Gourju and Hargreaves, *The Rubber Crisis*; Boyle, *Agricultural Economics*, pp. 233–9; Maxwell, *Economic Aspects of Cane Sugar Production*.

The line separating pure stabilisation schemes of this kind from protective measures designed to raise the price of farm produce in the home market is very narrow. The so-called McNary-Haugen proposals, of which there are several different variations, all agree on the one essential point, that they aim at artificially removing from the domestic market for certain agricultural commodities any surplus produced in the United States. The surplus would be withheld from the domestic market by some special agency or by paying to exporters in some form a sufficient amount to enable them individually to purchase the commodity and sell it abroad. It is obvious that the price in the home market would be raised above the world market price by some amount approximately equal to the duty which it would be necessary to pay to import such commodities, and that the tariff system would thus produce its maximum price-raising result. We are not concerned with the controversy which rages round these proposals in the United States ; all we wish to do is to indicate that they are essentially protective in character, and that if they are to be justified it must be by means of the general argument in favour of protection. They cannot be justified on the ground that they are proposals to stabilise prices, because they aim not at the stabilisation but at the increase of prices.[1]

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[1] *Report of Business Men's Commission on American Agriculture*, pp. 182–7.

Schemes for stabilising prices based either on the orderly export of commodities or on proposals of the type made in the United States are clearly inapplicable in a country such as Great Britain which imports large quantities of food. A different scheme for stabilising prices in Great Britain has therefore been suggested based on the non-protective control of imports of wheat and meat. This scheme, which was put forward at the Imperial Economic Conference in 1923, has been recommended in principle by the Committee on Stabilisation of Agricultural Prices, and has received, sometimes with minor variations, a good deal of influential support. The Stabilisation Committee proposed that the whole machinery concerned with the importation of wheat and meat should be centralised in the hands of either a public department or else an independent board, which would be entrusted with the purchase and resale of all imports of these commodities. Such a body could pursue a uniform buying policy throughout the year and could also sell at uniform prices. This scheme could probably achieve the object of reducing short term fluctuations by controlling the flow of imported wheat and meat on the market, but of course the addition of any power of fixing the price of wheat so as to secure the British farmer his profit would immediately bring the scheme within the category of protective devices. The so-called Kanitz scheme proposed in Germany in 1894 contained price-raising provisions of this kind.[1]

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[1] *Report of Business Men's Commission on American Agriculture*, pp. 161–9 ; *Wheat Studies of the Food Research Institute of Stanford University*, vol. iii., Nos. 4 and 5.

If such a scheme could be satisfactorily put into operation, the body controlling imports would probably develop direct relations with the bodies controlling exports in the food-producing countries, and, in this case, assuming goodwill and a desire to co-operate on both sides, the cause of stabilisation might be very materially advanced. This consideration suggests that the improvement of agriculture is sometimes a matter which can be achieved better by international action than by the action of any single country working in isolation. We shall have something to say later about international action in respect of agriculture, but it is important to indicate at this point that the stabilisation of prices is one of the matters which such international action is particularly calculated to assist. The arrangements between importing and exporting agencies mentioned above might help to reduce fluctuations caused by maladjustments of demand and supply, while international monetary policy alone is capable of reducing the fluctuations caused by changes in the general price level.[2]

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[1] Dawson, *Protection in Germany*, p. 136; *Report of Committee on Stabilisation of Agricultural Prices*, pp. 65 *sq.*; Dampier-Whetham, *Politics and the Land*, pp. 171–9. The different varieties of proposals of this kind that were made after the war are described in Enfield, *The Agricultural Crisis*, pp. 157 *et sq.* The German plan of taxing imported potatoes from February to July, but admitting them free during the rest of the year, is clearly protective. Kelly, *Customs Tariffs of the World*, 1924, p. 545.

[2] *Preliminary Report on Sale of Agricultural Produce*, Rome, 1925.

Sub-section 4. *The Width of the Market*

In the last chapter it was pointed out that the economies of marketing can be maximised in a wide market. It is therefore the duty of the Government to assist in widening the market for the products of its farmers. A wide market, as was previously explained, depends on certain conditions, among which are, first, a universal or very widespread demand for the product, second, portability, which depends upon non-perishability and the relation between bulk and value, and third, the possibility of purchase without inspection, which depends upon grading and standardisation. Anything that the State can do to bring about any of these conditions will help to widen the market for its agricultural produce and will consequently assist in the realisation of the utmost marketing efficiency.

The first condition, namely, a universal or very widespread demand, can be partly created by advertising or otherwise stimulating the sale of a nation's agricultural produce in foreign markets. Many exporting countries employ agents in Europe to obtain fresh markets for various farm products; the United States in particular spend a very large sum annually in pushing the sale of their surplus farm produce.[1] The Imperial Economic Committee has as one of its objects the increase of the sale of imperial grown products in Great Britain by every kind of non-protective encouragement. The policy of the Committee is to stimulate voluntary preference by consumers, for which three things are necessary: first, that the consumer should be induced to select Empire goods, second, that he should be able to recognise them, and third, that they should be adequate in supply and quality and reasonable in price.[2]

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[1] Boyle, *Marketing of Agricultural Products*, pp. 449–51.

[2] *Eighth Report of Imperial Economic Committee*, Cmd. 3018; *Factors in Industrial and Commercial Efficiency*, by the Committee on Industry and Trade, 1927, p. 385.

The second condition of a wide market, namely portability, is usually attained by means of co-operative organisation, which insists on suitable packaging and sometimes " processes " goods in order to render them less perishable or to reduce their bulk in relation to their value. In so far as the State assists such methods, it is indirectly through whatever assistance it may give to the development of the co-operative movement. The State may, however, itself insist on certain standard methods of packing, as in the case, for example, of dairy produce exported from the Irish Free State. The reduction of the bulk of commodities in relation to their value is usually an incidental result of improving the quality of agricultural products.

The third condition of a wide market, namely, the possibility of purchasing without inspection, is attained by grading and standardisation. The great importance of these two operations has been insisted on already in numerous different connections, but it is in relation to the reduction of marketing costs by abolishing the necessity for the detailed inspection of every consignment that they are most valuable. Nothing widens a market more than the existence of well-recognised standards and grades, which protect purchasers in distant countries from fraud, dishonesty or negligence on the part of the producers. Frequently the imposition of such standards and grades is undertaken by co-operative societies, but in many cases governments have imposed statutory grades and standards. Canada, Australia and New Zealand are amongst countries that have legislated with regard to the standardisation and grading of exports, and a large amount of legislation on the subject has been passed both by State and Federal Governments in the United States. The Irish Free State has instituted a national brand for exported creamery butter.[1] The good results of such measures have heretofore been realised mainly in countries producing for export, but efforts are being made in England to extend them to commodities produced for the home market.[1]

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[1] *Report of Committee on Stabilisation of Agricultural Prices*, p. 65 ; Boyle, *Marketing of Agricultural Products*, pp. 435 sq.

In practically every branch of marketing the State can assist in the attainment of economies, but its assistance is frequently most useful when it is rendered indirectly through the agency of co-operative organisation. Marketing is the part of agricultural production which obeys the law of increasing returns most readily. The enjoyment of the benefits derived from that law depends principally on the realisation of the internal economies of production dependent on operation in large scale units, and the principal means by which the farmer can operate in such units is by the adoption of the co-operative method. The development of co-operative organisation is the pivot on which all economy in marketing depends, and its encouragement should therefore form the central point of any State policy designed to increase marketing efficiency. Other measures may be useful either to supplement the work of co-operative societies or to supply their place if they are not sufficiently developed ; but the encouragement of the co-operative method by means of education and propaganda must always remain the principal State function in the domain of marketing. Second in importance among the State's activities to assist marketing is the provision of marketing intelligence, which depends for its success on a widespread development of marketing research.

Section 5. Protective Agricultural Policies

The State measures which we have been discussing are all designed to promote efficiency in agricultural production, and, thus, to increase the farmer's profit. There may be cases, however, where the unrestricted and undirected pursuit of profit by individual farmers may lead to a type of agriculture that is injurious to the nation as a whole. For example, farmers may find it most profitable to pursue a very extensive system of cultivation, with the result that the nation ceases to be self-sufficient in respect of food supplies and that the rural population dwindles away through lack of employment. If either of these results were regarded as evil and undesirable from the national point of view, there would be an economic antagonism between the interests of the farmers and those of the nation as a whole. Needless to say if any such antagonism should arise the interests of the nation must prevail. And so in fact we find that many countries have adopted agricultural policies designed primarily, not with the aim of assisting the farmer to increase his profit, but with that of securing the nation as a whole from the real or imaginary dangers that might arise if farmers were allowed to conduct their industry merely with a view to the maximum profit.[1]

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[1] *Agricultural Tribunal of Investigation*, p. 79.

All such policies are protective in the sense that "they induce farmers to pursue a line of action that they would not pursue left to themselves."[2] The best criterion by which to judge whether a policy is protective in this sense is whether it aims at increasing the size or the efficiency of the agricultural industry. These two aims are not always identical. One is designed to maximise the gross product and the other the net product of the industry; or, to use an antithesis suggested by Professor Macgregor, one aims at the prosperity of acres and the other at the prosperity of persons.[3] This distinction is not always clearly recognised. For example, the terms of reference of the Agricultural Tribunal of Investigation were "to enquire into methods . . . to increase the prosperity of agriculture and to secure the fullest possible use of the land for the production of food and the employment of labour at a living wage." These three aims are frequently mutually antagonistic.

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[1] Taylor, *op. cit.*, pp. 85 *sq.*; Ernle, *op. cit.*, 418 I; *Agricultural Tribunal of Investigation*, p. 9.

[2] *Agricultural Tribunal of Investigation*, p. 98.

[3] *Ibid.* p. 9.

The principal aims at which protective policies are directed are, first, a large production of food, and second, the maintenance of a large rural population. The advantages of a large food supply are obvious, especially in case of war when foreign supplies are in danger of being cut off by enemy action. The advantages of a large rural population are less definite. They are stated to arise sometimes from the superior health of country over urban dwellers, although the fact of this superiority is questionable; sometimes from the political conservatism of farmers; and sometimes from the desirability of possessing a breeding ground for soldiers.[1] With the reality or the value of these advantages we are not concerned, nor are we concerned with the policy which any country should adopt to secure them. Such policy varies from country to country and depends upon a multitude of considerations. All that we need do here is to indicate that these advantages if they are desired can be secured by appropriate measures in regard to agriculture, and that such measures may sometimes be costly. Whether the price is worth paying is a matter to be decided by the framers of national policies.

If the end desired is the production of a large food supply, the correct policy is the encouragement, by subsidies or import duties, of arable cultivation, which feeds at least four times as many persons as can be fed from the same area of grass.[2] A duty simply on the crop desired to be encouraged, for example wheat, will not achieve this object in itself, as it will probably lead to a mere substitution of the protected for unprotected crops and the total area under tillage will not be increased; duties must therefore be imposed on other crops as well; once the tariff has been extended to all tillage products, an unanswerable case will arise in favour of its extension to those animal products which utilise tillage products as raw material. Hence, in order that the food supply may be increased by means of protective duties, those duties must extend to agricultural produce generally.[1]

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[1] *Agricultural Tribunal of Investigation*, pp. 101, 175–80, 191, 221–37; Gray, *op. cit.*, pp. 219 *sq.*; Ely and Moorhouse, *op. cit.*, pp. 113–4; Carver, *Principles of Rural Economics*, p. 334; Sims, *op. cit.*, chap. xvii.

[2] Ernle, *op. cit.*, p. 414 I; *Agricultural Tribunal of Investigation*, p. 194; C. Douglas in *Journal of Agricultural and Highland Society*, 1921, p. 4; *Report of Agricultural Policy Sub-Committee of Reconstruction Committee*, Appendix XV.; Hall, *Agriculture after the War*, p. 127.

By means of the adoption of general agricultural tariffs of this kind both Germany and France have succeeded in maintaining a large supply of home-grown food. The fall in the price of cereals has been checked, and the area under cereal crops has been therefore maintained at a relatively high level. The number of live stock and the production of root crops have materially increased, and the gross output of these two countries remains high in spite of the revolution that has taken place in the agricultural systems of neighbouring countries.[2] The price paid for these advantages has been, first, dearer bread prices than in unprotected countries; second, low yields per acre owing to the cultivation of bad land; third, the relative decline of certain extensive types of farming, such as sheep raising; lastly, a relative slackening of industrial progress.[3] In both countries the tariff policy has been supplemented by a very enlightened programme of agricultural improvement; in other words, the efficiency as well as the size of the industry has been increased by State assistance. The relative shares of the two branches of public policy in bringing about the present agricultural condition of these countries is difficult to isolate; but it is safe to conclude, first, that the tariff has been the most important factor in maintaining the area under cereals, and second, that the evil indirect effects of the tariff have been largely counterbalanced by the "efficiency" branch of the policy.[1] Possibly the most important effect of the tariff on the food supply arose from the feeling of confidence which it engendered. The farming classes felt that their interests were not being neglected by the Government, and that they could continue their production with the assurance that they would be protected against injury arising from fluctuations in prices arising from causes outside their own control. One very high authority is of opinion that "it was not the tariff but the policy of which the tariff was an expression that vitalised German agriculture."[2]

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[1] *Agricultural Tribunal of Investigation*, p. 148. The necessity of extending protection to every type of produce is excellently explained in Dietzel, *The German Tariff Controversy*, in the *Quarterly Journal of Economics*, May 1903, p. 373.

[2] *Agricultural Tribunal of Investigation*, pp. 11–36, 45–56; Clapham, *Economic Development of France and Germany*, pp. 178, 292 *sq.*; Conacher and Scott, *Report to the Board of Agriculture for Scotland on Agricultural Credit in France.*

[3] *Agricultural Tribunal of Investigation*, pp. 15, 149; Clapham, *op. cit.* pp. 177, 183, 212; Venn, *op. cit.*, pp. 66, 336; Ashley, *Modern Tariff History*, p. 97; Conacher and Scott, *op. cit.*, p. 10; Augé-Laribé, *op. cit.*, pp. 120–1, 294; Meredith, *Protection in France*, pp. 94–100; Dawson, *Protection in Germany*, pp. 204, 212.

English policy has been framed on fundamentally different lines. Cheap food was the keynote of English tariff history in the nineteenth century, and the very fact that there was no industrial protection deprived the English farmer of the claim for import duties on agricultural produce. These duties have sometimes been granted in other countries as a compensation to the farmer for the evils which he suffered from the protection of manufacturing industry; it is very doubtful, for example, whether the United States would have placed import duties on foodstuffs were it not for the policy of high industrial protection which gave the farmer a claim for equivalent assistance. In England no such assistance could be demanded; the English manufacturer asked for no protection for himself and would not tolerate protection for his farming fellow countrymen. England wanted cheap food and was prepared to pay the price of risking starvation in war time. In fact, when war did come, English agriculture showed a remarkable adaptability, justifying the prophecy made by Sir James Caird in 1851.[1] But when a food producing policy did become necessary in 1916, it took the form of encouraging tillage, by means not of import duties but of compulsory tillage and guaranteed prices.[2] Immediately the crisis passed, the traditional policy was restored, and it may be taken as settled that no artificial inducements will be offered to English farmers in the future to deflect them from pursuing their industry on the lines which they find most profitable.[3]

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[1] *Agricultural Tribunal of Investigation*, pp. 13–16, 150; Conacher and Scott, *op. cit.*

[2] Middleton, *Recent Development of German Agriculture*, Cd. 8305, p. 45.

Needless to say the increase in the size, as distinguished from the efficiency of the industry, with a view to maximising food production, is a policy suitable only for countries with a large industrial population. Countries which depend on the export of agricultural produce for their international trade should never pursue a policy of agricultural protection, because in those countries a large volume of agricultural imports indicates, either that the imported commodities are raw materials of further agricultural production, or that the conditions of production of those imported commodities are less advantageous than those of the commodities actually produced. In advancing industrial countries, the real competitor of the farmer is the exporter of manufactured goods, who is anxious to exchange such goods for food produced abroad. In purely agricultural countries no such internal competition exists, and it is only in export markets that the pressure of competition by farmers in other countries may become dangerous.[4] Denmark and the Irish Free State are examples of countries in which agricultural protection would simply result in decreasing the net revenue of the farmer without any corresponding advantage to the other sections of the community.

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[1] *Agricultural Tribunal of Investigation*, pp. 107–8, 148, 183 ; Venn, *op. cit.*, p. 191 ; Taylor, *op. cit.*, pp. 92–3.

[2] Ernle, *op. cit.*, pp. 414 D *sq.* ; *Report of Agricultural Policy Sub-Committee of Reconstruction Committee* ; Middleton, *Food Production in War.*

[3] *Agricultural Policy*, Cmd. 2581, p. 3.

[4] *Agricultural Tribunal of Investigation*, pp. 146–7 ; Meredith, *Protection in France*, pp. 69–70.

The second end aimed at by a policy designed to increase the size rather than the efficiency of national agriculture is the maintenance of a large rural population. This advantage, if desired, will also result from a policy of protection, designed primarily in the interests of food production. Both France and Germany have succeeded in keeping the population on the soil, partly as a result of the encouragement given by the protective policy to arable cultivation, which gives a very much greater amount of rural employment than grass farming.[1] Thus, the two advantages of food supply and rural population may be secured by the same measure. The latter advantage may, however, also be attained by a different type of measure not involving import duties, and not involving therefore the indirect disadvantages to which import duties may give rise. This alternative policy is the encouragement of small holdings. This policy is no less protective in the sense in which we use the word than an import tariff, because it aims at the establishment of a productive unit of a certain size, determined not by the optimum size calculated to secure the maximum advantage of production but by considerations of a different kind. In other words it aims at increasing the volume rather than the efficiency of agricultural production, and is protective in the sense that " it induces farmers to pursue a line of action that they would not pursue left to themselves." [2]

The density of the rural population varies inversely with the size of the farm. In the Irish Free State, for example, on equal areas of land there are five times as many persons working on farms of 15 to 30 acres and three times as many on farms of 30 to 50 acres as on farms of over 200 acres, and similar results are obtained from English, German and Danish statistics.[1] The maintenance of a large rural population can therefore be secured by the encouragement of small holdings, accompanied by measures for the development of forestry, of rural industries, and in maritime neighbourhoods, of fisheries.[2]

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[1] Ernle, *op. cit.*, p. 414 c ; *Agricultural Tribunal of Investigation*, pp. 34, 49, 54 ; Middleton, *Recent Development of German Agriculture*, p. 17 ; Hall, *Agriculture after the War*, p. 127.

[2] Sidgwick (*Principles of Political Economy*, p. 481) says that the artificial maintenance of small holdings may lead to a " state of unstable equilibrium since the greater profitableness of the large farm system to employers would be continually tending to introduce it."

The danger of a policy of this kind, unless framed with the utmost care, is that the standard of living of the population may be reduced. While the output per acre is larger on small farms than on large, the output per man is smaller.[3] The rate of remuneration of agricultural labour in England, though unfortunately low, is probably the highest in Europe, and it has been suggested that any extended development of small holdings in England will be impossible owing to the low standard of living that small farmers enjoy in comparison with that enjoyed both by paid agricultural labourers and by the highly paid wage earners in the towns.[4] It is possible that the lower standard of living may be rendered tolerable by the increased feeling of security and independence that ownership confers, but there is nevertheless a danger that a small holdings policy may tend to the prosperity of acres rather than to the prosperity of persons.[5]

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[1] *Irish Free State Agricultural Statistics*, 1847–1926, pp. li, lxiii; *Agricultural Tribunal of Investigation*, pp. 43, 191; *Agricultural Output of England and Wales*, 1925, Cmd. 2815, p. 105.

[2] *Agricultural Tribunal of Investigation*, pp. 82, 101, 185, 188–9; *Agricultural Policy*, Cmd. 2581, pp. 4–5; Ely and Moorhouse, *op. cit.*, pp. 117–8; Pratt, *Transition in Agriculture*, p. 229; Levy, *Large and Small Holdings*, p. 114; Pigou, *Economics of Welfare*, p. 18. The Royal Commission on Agriculture in India points out that the possibility of increasing employment by means of rural industries is very small. *Abridged Report*, p. 71.

[3] *Irish Free State Agricultural Statistics*, pp. viii, liv.

[4] *Agricultural Tribunal of Investigation*, p. 88; Orwin and Peel, *op. cit.*, p. 12; Orwin in *Journal of Royal Agricultural Society*, vol. 83, p. 12.

[5] *Agricultural Tribunal of Investigation*, p. 36. The possible evil effects of such a policy are minimised when the measures creating the small holdings are supplemented by other measures providing credit and educational facilities. Of course subdivision should always be prohibited. C.E.I. 36, p. 653. Carver, *Principles of Rural Economics*, p. 340. The rural population may also be maintained by laws making compulsory the employment of a certain number of workers on farms of a certain area. Laws of this kind have been

In considering the possible effects of a small holdings policy on the food supply of the country, it must be remembered that it is the gross and not the net agricultural production that varies inversely with the size of the holding. The amount of cereals produced will not necessarily be increased ; the greater part of the increased production will probably take the form of animal products, for which large quantities of feeding stuffs must be either imported or grown on the farm. Even in countries where the area ploughed varies inversely with the size of the holding, the tillage is mostly carried on for the sake of providing home supplies of feeding stuffs. The only way in which a small holdings policy might increase cereal cultivation and hence indirectly increase the supply of home-grown food is by its effect in increasing the supply of agricultural labour ; but, in order that this effect might be produced, the existence of numerous large holdings would be necessary. It may be concluded that, from the point of view of national self-sufficiency in the matter of food supplies, the size of the holdings is comparatively irrelevant. Thus, while the adoption of the appropriate measure primarily designed to secure national self-sufficiency, namely protection, incidentally increases the volume of rural employment, the adoption of the appropriate measure primarily designed to increase rural employment, namely small holdings, does not necessarily increase the nation's supply of food. Some of the supplementary measures accompanying the small holdings policy may, however, incidentally increase supplies. The development of fisheries for example would have results of this kind.[1]

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attempted in some parts of Italy, but such an extreme interference by the State with the farmer's business could never become a common expedient. *Technical Survey of Agricultural Questions*, published by the International Labour Office, Geneva, 1921, p. 175.

[1] *Agricultural Tribunal of Investigation*, pp. 132, 177-8, 201 ; Irish Free State *Agricultural Statistics*, 1847–1926, pp. vii, ix, x, xxvi, xliii, xlvii, lxii, lxiii ; Ernle, *op. cit.*, p. 418 v ; Orwin and Peel, *op. cit.*, p. 11 ; Middleton, *Recent Development of German Agriculture*, Cd. 8305, pp. 45–6 ; *Report of the Liberal Industrial Inquiry*, p. 323 ; *Report of Agricultural Policy Sub-Committee of Reconstruction Committee*, p. 60.

Food supply and rural employment are the two most usual objects aimed at by State interference in agricultural production of a protective nature. Other considerations sometimes give rise to similar interference; ethical motives may lead to the prohibition of demoralising products, such as opium; revenue precautions may make necessary the prohibition of the cultivation of dutiable crops such as tobacco; and the desire to conserve the national resources may dictate the prohibition of operations which are destructive of the soil. Subsidies or protection given to one or two special articles are not uncommon in countries whose general policy is non-protective. For instance, cheese is protected in Denmark [1] and sugar beet is subsidised in Great Britain and the Irish Free State. It is possible to regard these measures as part of an efficiency rather than a protective policy. Cheese is an important side line in the dairying industry, the success of which may assist the prosperity of the main branch of the industry, and the advantages conferred on the general agriculture of a country by reason of the presence of sugar beet cultivation are invaluable. The assistance of beet cultivation in England and the Irish Free State could never be justified merely by the desire to have home supplies of sugar; its only justification is that it aids in building up the development of other branches of agriculture, both tillage and animal.[2] Certain crops may also be legitimately protected if their cultivation is desirable from the point of view of diversifying production or of conserving the fertility of the soil, because the result of such protection is the increase of agricultural efficiency in general.[1] When the assistance takes the form of experiments at State expense in the possibilities of growing some new crop profitably, it is clear that it is really an educational rather than a protective measure. The undertaking of such experiments, followed if successful by demonstrations to farmers, is quite compatible with the maintenance of a free trade policy ; it is part of an ordinary programme of State assistance, designed, not to deflect farmers from one line of production to another, but to show them in which direction lies the attainment of their maximum profit.[2]

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[1] *Agricultural Tribunal of Investigation*, p. 272.

[2] Ernle, *op. cit.*, p. 418 L; *Report of Agricultural Policy Sub-Committee of Reconstruction Committee*, pp. 26–7; *Agricultural Policy*, Cd. 2581, p. 2; Middleton, *Report on Development of German Agriculture*, Cd. 8305, p. 38. The Agricultural Tribunal of Investigation recommended that the English free trade policy should be broken by another exception, namely, a duty on imported malting barley, but the Government refused to follow this recommendation. *Memorandum on Malting Barley Tax*, Cd. 2996. The Finance Act of 1925 imposed an import duty of £4 per cwt. on hops.

Section 6. International Assistance of Agriculture

Agriculture can be assisted by international as well as by national action. In recent years there has been a development of international activity in this direction. The foundation of the International Institute of Agriculture in 1905 was the first serious attempt to co-ordinate and supplement the work of different national governments for the encouragement of agricultural progress. The post-war depression emphasised the necessity for international co-operation, and the World Economic Conference of 1927 was remarkable for the fact that " for the first time agriculture was represented side by side with commerce and industry in such a way that it could take its place in a general review of the economic situation of the world." [3] The international measures that have been, or that could be adopted to assist the agricultural industry may be divided in two classes : first, those designed to supplement and co-ordinate the measures of different national governments, and secondly, those which are impossible except by means of international action.

The greater part of international activities in aid of agriculture belong to the former class. They are admirably described and explained in the memorandum entitled *Agricultural Problems in their International Aspect*, prepared by the International Institute of Agriculture for the World Economic Conference.[1] Both the cultivating and the marketing side of the industry have engaged the attention of the international agencies. On the cultivating side by far the most important effort has been in the domain of research in both the science and the craft of agriculture. On the scientific side, research has been conducted on meteorology, ecology (that is the relations existing between climatic factors and vegetable and plant yield), soil science, fertilisers, plant propagation, plant biology, biochemistry, tropical cultivation, animal husbandry, agricultural engineering, plant diseases and pests, sylviculture and arboriculture. On the craft side, research has been conducted on credit, insurance, co-operation, costings and systems of land tenure. The International Institute of Agriculture also collaborated with the International Labour Office in carrying out an inquiry in reference to the vocational education of farm workers. These two organisations have set up a Mixed Advisory Agricultural Committee to advise them regarding the collaboration to be observed in inquiries into agricultural problems.[2] Research has also been conducted on the policies of assistance to agriculture pursued by the various national governments.[3]

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[1] *Report of Business Men's Commission on American Agriculture*, p. 172.

[2] Taylor, *op. cit.*, pp. 93–4 ; *Agricultural Tribunal of Investigation*, pp. 97–9.

[3] *Final Report*, p. 10.

The pressing need of agriculture for credit facilities has engaged the special attention of international organisations. In 1925 the International Parliamentary Trade Conference, meeting at Brussels, drew the attention of the International Institute of Agriculture to the desirability of forming an international agricultural credit organisation with the object of transferring capital from prosperous to needy countries. The Institute referred the matter to a committee which

[1] C.E.I. 36.

[2] *The Representation and Organisation of Agricultural Workers*, Geneva, 1928.

[3] C.E.I. 36, pp. 9–19.

reported that the stimulation of such transfers of capital was most desirable, and that it could be assisted by periodical conferences of representatives of agricultural and land credit institutions and by the establishment of a permanent advisory office with its headquarters at the Institute. In regard to the proposed international credit organisation, the Committee advised that further research was advisable, and such research is now proceeding.[1] The World Economic Conference refused to make any definite recommendation on the subject in view of this research by the Institute; the Final Report of the Conference requested "the League of Nations to give full consideration to the documentation of the International Institute of Agriculture with a view to examining the possibility of international collaboration in respect of agricultural credits in whatever form may be found from experience to be most suitable with a view to promoting the recovery of agriculture when it is short of capital."[2]

The principal service rendered to the marketing side of agriculture by international action has been in the region of research. The International Institute of Agriculture has devoted much attention to marketing research. Statistics of international trade and monographs on the trade in particular commodities have been published, detailed research into the organisation of certain markets has been made, national legislation on marketing has been collected and compared, and various technical problems have been studied. The General Assembly recommended in 1924 the preparation of a programme of extended research, and in response to this recommendation the Institute prepared a report in which such a programme is outlined. This report states that marketing is a peculiarly suitable subject for international research for two reasons: first, because "in profiting by the experience of each country it is possible to find the best solutions in the interest of all," and secondly, because "marketing is not merely a fact in the internal economy of each country, but it is a phenomenon of primary importance in international economic activity." This report contains proposals for a full programme of research over a very wide field. It emphasises the fact that such research is possible only with the fullest collaboration on the part of the different national governments.[1] The Horace Plunkett Foundation is doing valuable work on similar lines in regard to the development of co-operative methods in the British Empire. This body collects statistics of the co-operative movement, advises on co-operative organisation, and acts as a clearing house of information on the movement. Another means by which marketing can be improved by international action is by the conclusion of arrangements between the marketing agencies in exporting and in importing countries with a view to adjusting supply to demand and to stabilising prices in the interests of producers and consumers alike.[2] The International Economic Conference laid great emphasis on the desirability of such arrangements, and recommended that there should be created a committee representing national and international organisations of farmers and consumers to study the possibility of further advances in this direction.[3]

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[1] C.E.I. 36, pp. 655–8.

[2] P. 50. The Consultative Committee of the League of Nations at its meeting in 1928 discussed a resolution suggesting international action to provide credit facilities for agriculture, *The Times*, May 16, 1928.

The various measures of assistance rendered to agriculture by international action already mentioned are all designed to supplement or co-ordinate national agricultural policies. There are some matters, however, with which separate nations are powerless to deal, and which must be dealt with by international action. One such matter is the stabilisation of general prices. In 1897 the English Royal Commission on Agriculture recommended that the British Government should co-operate with foreign Powers in an effort to stabilise prices by the introduction of a bi-metallic standard, and the Committee on Stabilisation of Agricultural Prices in 1925 recommended that " every effort should be made to bring about the international conference of central banks proposed by the Genoa Conference with the object of . . . developing internationally a policy under which credit will be regulated . . . with a view to preventing undue fluctuations in the purchasing power of gold." [1] The evil effects of fluctuations of general prices on agricultural producers were explained above; clearly the prevention or the reduction of these fluctuations would greatly assist the prosperity of the industry; and it is only by international action that this desirable objective can be attained.

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[1] *Preliminary Report on the Marketing of Agricultural Produce*, Rome, 1925.

[2] *Report of Committee on Stabilisation of Agricultural Prices*, pp. 77–8.

[3] *Final Report*, p. 49; *Preliminary Report on Sale of Agricultural Produce*, etc., Rome, 1925.

Finally, it may be said that every step taken in the direction of improved international relations will assist the agricultural industry by putting an end to the necessity of protective policies passed with defensive aims. The removal of protective barriers will enable agriculture to develop along the most efficient lines. The market for every product will be widened, and national specialisation in the most profitable branches will be encouraged. The International Economic Conference stated on this matter: " It is desirable that all hindrances to the free circulation of and trade in agricultural products should be removed in so far as their removal does not endanger the vital interests of the different countries and their workers." [2]

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[1] *Report of Committee on Stabilisation of Agricultural Prices*, pp. 16-20. The American Business Men's Commission on Agriculture recommended an " earnest and intelligent effort to increase the stability of prices through national action and international co-operation," *Report*, pp. 33, 187.

[2] *Final Report*, p. 48.

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